

CHOICE OF ORGANIZATIONAL FORM IN FARMER-OWNED ENTERPRISES

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ABSTRACT

Agricultural producers are functioning in a world that continually changes. Producers have historically banded together to create solutions to the new needs resulting from such changes. While much research has been conducted on how new technologies are adopted by agricultural producers, little has considered the organizational forms used in creating those enterprises that address producers' needs and in turn provide benefits to these groups.

This thesis uses the theories of diffusion of innovation and path dependency to analyze the choice of organizational form in three case studies profiling clusters of producer-owned and -controlled enterprises. The case studies feature Saskatchewan-based, producer-owned, inland grain terminals, community-based hog barns, and American and Canadian experiences with the use of New Generation Co-operatives. While diffusion of innovation theory helps to explain why a particular choice is made, path dependency explains why such choices tend to be replicated in favor of alternatives.

Analysis of the data reveals that the experiences found in the case studies are consistent with the suggestions of the two theories applied. The solutions that producers select will change to reflect the times. Small initial advantages characteristic of a given choice build, through a process of positive feedback, to provide benefits reflecting economies of scale, thus making alternative choices less attractive. While sufficient time must pass following the introduction of a new organizational form before it is widely adopted, networks of

contacts are also important to the effective spread of information about the innovation.

Finally, successful introduction of a particular organizational form depends on a convergence of necessary factors and circumstances, and also on a perception that it will provide benefits.

The findings of this research will be useful in public policy development, particularly as it relates to rural economic development. This new knowledge will also be valuable to existing organizations plotting strategies to remain relevant to their respective stakeholders.

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LIST OF ABBREVIATIONS

ACSC	American Crystal Sugar Company
ADM	Archer Daniels Midland
ITAC	Inland Terminals Association of Canada
LLC	Limited Liability Corporation
MCP	Minnesota Corn Processors
NGC	New Generation Co-operative
PWGA	Palliser Wheat Growers Association
SMBSC	Southern Minnesota Beet Sugar Cooperative
SWP	Saskatchewan Wheat Pool
USDA	United States Department of Agriculture
WCWGA	Western Canadian Wheat Growers Association
WIT	Weyburn Inland Terminal

CHAPTER ONE: INTRODUCTION

1.1 Background

The history of agriculture is a history of change. From its earliest beginnings, producers have adopted new technologies that allowed them to realize additional or new benefits. One of the earliest adoptions of technology, for example, included harnessing sources of energy other than human. This first took shape in the form of draught animals, which were later replaced by machines. Subsequent innovations improved on earlier ones, as witnessed in the use of larger and more efficient machinery and the use of herbicides, pesticides, and fertilizers, all intended to improve productivity and presumably the benefits accruing to producers.

While technology always has, and likely always will, shape agricultural practices, other nontechnological innovations have influenced the agriculture sector as well. These innovations are also the product of the needs of producers, the demands of consumers, and the values and preferences of both. Examples include the various policies that have been imposed on producers, such as the settlement plans developed for the Canadian Prairies. Likewise, the political sway of special interest groups, as evidenced in the Green Revolution, has also affected how the agricultural sector has evolved. Producers themselves have shaped agriculture by developing organizations that allowed them to reap greater benefits from their efforts. A clear example can be seen in the development of

agricultural co-operatives in North America early in the twentieth century. As with other adopted innovations, the purpose of these organizations reflected the unmet needs of producers of the day.

While considerable research has examined how technological innovations are adopted and spread, less attention has been paid to these other nontechnical innovations. With few exceptions (see Fairbairn 1994; Fairbairn 1995–96), little research has focused specifically on the particular organizational forms that producers have used to create organizations or enterprises that address their needs and in turn provide them with benefits.

This thesis examines some contemporary examples of farmer-owned and -controlled enterprises and considers the organizational forms employed in their development.

Before beginning this examination, however, it is important to review the current state of the agriculture and agri-food sector.

1.1.1 The “New” Agriculture

As discussed above, agriculture has changed, and continues to change. Producers are faced with changes to production techniques and practices, changes in markets, changes in the perceived importance of agriculture in public policy, changes in related sectors, and all of this within a world coming to grips with the realities of globalization. No longer are production decisions based only on what experience has proven to make most sense and which will yield the best returns. Producers now must make decisions in light of, among other things, constantly changing customer preferences, the agricultural policies of foreign nations, the latest advances in production technology, or on the basis of regimented production arrangements.

1.1.2 The Industrialization of Agriculture

This changed environment, or “new” agriculture, is the product of what has become known as the “industrialization of agriculture” (Boehlje 1996; Drabenstott 1994; Fulton 1995; Royer and Rogers 1998). Boehlje describes this phenomenon as “the application of modern industrial manufacturing, production, procurement, distribution, and co-ordination concepts to the food and industrial product chain” (30). He goes on to contrast the traditional agricultural system with the new by suggesting that

the new industrialized agriculture moves towards (a) manufacturing processes, (b) a systems approach to production and distribution, (c) separation and realignment of the stages in the food chain, (d) negotiated coordination among those stages, (e) new kinds of risk, (f) concerns about system power and control, and (g) a more important role for information (30).

A quick scan of the agri-food industry today confirms Boehlje’s observations. The changes he outlines are most visible to those individuals closest to and most affected by them—the primary producers.

1.1.3 Industrialization or Systemization?

Although the conditions and trends are clear, the “industrialization” label, while compelling, is disputable. Specialization and mechanization, the hallmarks of industrialization, are undeniably part of today’s agriculture. Industrialization also represents, however, a linear system characterized by repetition of task, a clear and predictable directional flow of activity, and established hierarchical relationships. This is less typical of today’s agriculture. While specialized at an individual level, producers are diversifying through relationships with other producers (Holmlund and Fulton 1999). Such relation-

ships are strategically struck and possibly even dissolved later to suit continuously changing opportunities. Rather than a linear relationship in the value chain, producers are part of networks, with each node representing autonomous and specialized operations, while being part of an integrated, evolving, and extremely diverse system. The power thus acquired also challenges the notion of a hierarchical relationship.

Rather than labeling this shift the “industrialization of agriculture,” a more appropriate title might be the “systemization of agriculture.” This title better captures the inter-relatedness and interdependence that exist in the agricultural sector. This system, characterized by evolving relationships, still contains all the features of industrialized agriculture as described by Boehlje, but the systemization label better reflects the importance of knowledge, which is characteristic of the information age.

1.1.4 The Response of Producers

In the midst of and contributing to this change, some producers are creating enterprises that they own and control, and which provide them the services to survive in, and indeed exploit, this new agriculture. Situations in which producers own the mechanisms that provide them services have a long and rich history in Canada and the United States.

These new ventures are often large in scale, require significant capital, and thus involve many producers as investors. They also frequently take shape in clusters of activity. In Canada, there are many examples, including ventures in alfalfa dehydration and pelleting plants, intensive livestock operations, inland grain terminals, lentil splitting and bagging, oilseed crushing, and numerous others.

Interestingly, within these clusters of development, it is common to find ventures that are structured in similar or identical fashion to others in the group. While there is usually not anything inherent in the nature of the business activity that might explain the choice of a particular organizational form, it is still typical to find the same form replicated with each addition to the cluster.

This research examines three such clusters—producer-owned inland terminals, community-based hog barns, and New Generation Co-operatives.

1.2 Objectives of the Study

The objectives of this research are twofold. First, it attempts to provide a better understanding of why producers, given a range of choices, select particular organizational forms for the ventures they create. Second, given that certain choices of organizational form appear to be continually replicated in favor of other options, this study explores why such blueprinting occurs, despite the existence of these arguably equal or possibly superior alternatives.

1.3 Methodology

This research uses two bodies of theory to help understand the development of farmer-owned and -controlled enterprises. Diffusion of innovation theory has a rich history of use in a variety of disciplines and helps to explain how new ideas or innovations are adopted within a given social group. While illustrative, this theory does not provide a complete explanation, so path dependency theory is used as well. With its roots in

economics, path dependency offers ideas on why certain choices tend to be replicated in favor of alternatives. These theories are then applied to the data collected for this research.

This research uses an in-depth case study approach for data collection. This approach is well documented and has been refined and perfected by various qualitative researchers.¹ The three case studies are presented in such a fashion as to capture a sense of context, detail, time, and evolution. The cases reveal important insights into how decisions regarding organizational form are initially made and also why later groups also choose the same models for their ventures. While the analysis of these cases is not necessarily generalizable to all others, it does reveal important patterns and offers explanations for these patterns that might prove useful in understanding other similar cases.

The information included in the case studies was collected from two main sources. The first was a review of relevant literature. While this included academic books, journal articles, or research reports related to the cases, it also depended heavily on less formal sources. Nonacademic publications including books, media reports, press releases, and annual reports also provided important information to fully develop the case studies. Given that few academic writings have addressed these specific cases, this second group of resources proved extremely important in capturing the rich flavor of the groups of enterprises documented.

¹ For example, see *Handbook of Qualitative Research* by Denzin and Lincoln 1994, or *Case Study Techniques* by Yin 1994.

The second main source of information was the participant interview. Eleven interviews were conducted with individuals involved in the various ventures. Selected because of their intimate knowledge of the particular project, each of these individuals might loosely be identified as a leader in their respective cases. The interviews were semistructured conversations guided by prepared questions (see appendices A, B, and C), but which allowed certain issues that arose during the interviews to be pursued more fully. This approach offered consistency in the type of data collected while accommodating unique variations characteristic of each particular case. The interviews typically lasted between two and three hours, and were conducted with the understanding that the interviewees remain anonymous. For a more complete discussion of the interview process, see appendix D.

The information gathered for the case studies is analyzed using diffusion of innovation and path dependency theory. This is done by identifying the various elements or important features of the two bodies of theory and looking for evidence of those features in the respective case studies. Finally, notable consistencies or variances between the theory and the case studies is documented and examined further for any emerging trends. The resulting observations form the basis for a discussion of the implications for a better understanding of the agri-food sector.

As with any research, it is important in qualitative research such as this to consider what biases may enter the research and analysis process (Gall, Borg, and Gall 1996). The researcher must attempt to minimize such bias, but when this is not possible, it is equally important for potential bias to be identified and addressed. The possibility of bias enters

this particular research in two ways. First, the chosen methodology is subject to the personal bias of the researcher; the following section provides an examination of the researcher and his influence on this study. Second, the case study development involved interviews with research subjects, the selection of whom, again, presents a risk of a biased sample. A later section addresses that issue.

While the researcher was raised on a family farm on the Canadian Prairies and witnessed many of the changes occurring in agriculture that this study addresses, his most notable characteristic is his history of involvement with co-operative organizations. The researcher's family has a history of grass-roots co-operative involvement. Further, the researcher was employed by a co-operative umbrella organization for six years and has for the last five years been employed by a research institute focussed on co-operative organizations. This is relevant given that one of the case studies is specifically about a type of co-operative organizational form, and that many other farmer-owned initiatives in the past have taken a co-operative form.

While the researcher's experience provided him with a greater understanding of the co-operative organizational form, it also aided in his access to some of the key informants interviewed for the case study development. The researcher recognized the risk of a biased interpretation, which might provide favorable treatment of co-operatives. He took great care, therefore, in conducting the research and analysis, and then further reviewed and reflected on that work in order to provide the most objective handling that was possible.

The second area at risk of bias involves the selection of key informants interviewed for the case study development. It is not difficult to imagine how the selection of certain individuals might flavor the experience being recorded and analyzed. As noted in appendix D, for example, all of the key informants were “eager to participate” in this research. As might be expected, the particular individuals who were selected were deemed likely to be “information rich” with respect to the purpose of the study. This approach is described as “purposeful sampling” by Patton (1990). The case studies were first roughly outlined, based on available literature. The key informants selected for interviews were often identified in that literature as individuals with particular knowledge of the respective case. In other instances, well-situated sources of information, usually people also involved with the venture, identified individuals who were later selected for interviews. Patton describes this process as “snowball or chain sampling.” In each of the cases, care was taken to ensure that the sample included a mix of farmers, managers, and development agents. Relying solely on any of these would otherwise have resulted in biased reporting.

1.4 Organization of the Study

This chapter provides the background for the research, identifies the research problems, and outlines the research methodology. The remaining chapters of this thesis are organized as follows. Chapter two introduces the two bodies of theory that are used as the basis for analysis of the case studies. Diffusion of innovation theory examines why certain choices are made as ideas are introduced to groups, while path dependency theory considers why choices, once selected, tend to be repeatedly used in favor of alternatives.

Chapter three presents case studies of three clusters of agricultural enterprise development in which particular organizational forms were used. Saskatchewan-based, producer-owned, inland grain terminals and community-based hog barns provide examples of the choice and replication of particular organizational forms, while the US-based example of New Generation Co-operative development offers a contrast to the nonadoption of that same model in Saskatchewan. Chapter four uses the two bodies of theory outlined earlier to analyze the three case studies. Chapter five concludes this thesis with observations from the analysis, some additional speculation regarding these observations, suggestions for the application of this research, and recommendations for further study in this area.

CHAPTER TWO: DIFFUSION OF INNOVATION THEORY AND PATH DEPENDENCY THEORY

2.1 Introduction

The previous chapter outlined how the agricultural landscape has changed and continues to do so. Within this changed landscape are concentrations of activity that have occurred in response to that change. This activity consists of clusters of new enterprises that exhibit characteristics that make them similar to each other. One of these characteristics, and the subject of this investigation, is the organizational form of the various enterprises within each of these clusters. While the form used may vary from one cluster to the next, there appears to have been a preferred initial choice which is then replicated with each subsequent addition to the cluster. This initial preference might reflect that particular choice's ability to provide the greatest benefits to the adopters at that particular time. Three such clusters, and their respective organizational forms, are profiled in the next chapter.

The objective of this research is to try to understand why a particular organizational form was selected and also why that particular form was repeatedly used in favor of other options. Two theoretical frameworks are employed to this end. First, diffusion of innovation theory is used to understand why a particular choice from a range of options is selected based on characteristics of the choice, of the group making the choice, and of the environment in which the choice is being made. In short, the organizational form is the

innovation in question. What this theory does not explain is why a particular choice continues to be used with subsequent ventures rather than some alternative form that might work at least as well. In this case, it is the repeated choice of particular organizational forms that is observed. Path dependency theory helps to explain this latter phenomenon. Combining these two theories to examine these specific innovations and their repeated use may help to explain some of the structural characteristics of the rapidly evolving agriculture and food sector.

This chapter reviews the relevant portions of the two theories. Most of the material on diffusion of innovation is drawn from the work of Everett Rogers, while the section on path dependency borrows heavily from Brian Arthur. Each of these individuals is considered to be the leading thinker in their respective field.

2.2 Diffusion of Innovation Theory

2.2.1 Introduction

Diffusion of innovation studies began in the 1940s with the seminal work of Ryan and Gross (1943) related to Iowa farmers' use of hybrid corn varieties. This formative period in the history of diffusion research was almost entirely the domain of rural sociology. Since that time, diffusion research has spread into a variety of disciplines including economics, education, marketing, public health, communications, and general sociology (Rogers 1995). As Rogers points out, diffusion of innovation studies in these various disciplines have examined vast and rapid diffusion of innovations such as the Internet, but also the nondiffusion or limited diffusion of ideas such as the Dvorak keyboard for typewriters and computers.

Diffusion theory considers four main elements: the innovation, communication channels, time, and the social system into which the innovation is being introduced (Rogers 1995). Each of these four elements and their respective components is examined more closely below.

2.2.2 The Innovation

Rogers defines an innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (1995, 11). Much of the innovation diffusion research to date has focused on the spread of new technology. Rogers’s model for the diffusion of innovation suggests that how quickly, or even whether, an innovation is adopted is determined by characteristics of the innovation, including relative advantage, compatibility, complexity, trialability, and observability. Examining these factors is useful in predicting the diffusion of an innovation; these factors can also help to explain the relative success or failure of some innovation effort in the past or one that is currently underway. It is important to stress that these characteristics only need to be perceived by the members of the social group considering adoption, and that the evaluations of the innovation are therefore largely subjective. Each of these characteristics is examined more closely below.

2.2.2.1 Relative Advantage

Relative advantage is the extent to which the innovation being considered is perceived to be better than other available options, or than the idea or practice being superceded. The greater the advantage is perceived to be, the more likely the innovation is to be adopted. While relative advantage is often assessed using economic measures, other factors such

as social prestige, convenience, and satisfaction are important considerations. Satisfaction is sometimes a reflection of the immediacy in which the advantage is realized. Rewards that are not realized until some later time are frequently not viewed as holding much relative advantage. Adoption can be hastened through the use of incentives, which can be provided to the potential adopters or to the change agents introducing the innovation.

2.2.2.2 Compatibility

Compatibility refers to how closely the innovation aligns or is consistent with needs, experiences, and values of the group considering adoption. The less compatible the innovation is, the greater the uncertainty that exists, and therefore the less likely the innovation is to be adopted. As Rogers (1995) observes, however, if an innovation is completely compatible with what it is intended to replace, then it will not be an innovation at all. The more compatible an innovation is, therefore, the less change it reflects. While minimizing change might facilitate quicker adoption, it may also result in reduced relative advantage, thus making adoption less rather than more desirable. It is also conceivable that compatibility can be a deterrent to adoption if the innovation is replacing an item or practice with which the users are particularly dissatisfied. In such a case, the innovation will be judged in the same light as its predecessors. Compatibility with need is also important, because if the potential adopters do not perceive a need, then the suggestion of an alternative will likely be disregarded. Indeed, if some change agent attempts to convince members of the social group of their need rather than letting the need drive the search for an alternative, the process may backfire and lead to even greater skepticism of the innovation.

It is important to stress that the degree of compatibility only need be perceived, and on some occasions the way in which the innovation is presented will determine how compatible it appears to be to the potential adopters. A good example of this is in the naming of the innovation, which can conjure up ideas of what it might entail and can therefore help to shape an initial impression of the innovation in the eyes of the potential adopters. Compatibility can clearly have mixed effects, but in general is seen to positively relate to the rate of adoption.

2.2.2.3 Complexity

Complexity is the degree to which potential adopters find the innovation difficult to understand and use. A new idea or technology that is simple to understand is likely to be more quickly adopted than if it requires an accompanying set of new skills or understandings. Rogers identifies the introduction of home computers in the United States as a classic example in which the seemingly high level of complexity limited their acceptance. Only after less complex operating systems were developed did home computers become more user friendly and therefore more widely adopted in American households. Prior to that, adoption was largely limited to those few individuals with high technical skill and understanding.

2.2.2.4 Trialability

Trialability is the degree to which a technology or idea can be tried on a limited basis before being fully adopted. Experimentation with a new idea is more likely to lead to quicker adoption than an all-or-nothing scenario. Experimenting allows a learning-by-

doing approach and reduces the uncertainty involved in trying something new. Money-back guarantees or free trial periods are often used to entice potential adopters into trying some new product or idea (Heiman, McWilliams, and Zilberman 2000). Such strategies are frequently time limited and are intended to attract a certain critical mass of adopters, who will then presumably act as “demonstrations” to the next group of adopters. Trialability is of particular importance to the earliest group of adopters, as they do not have the opportunity to observe others around them who may already have used the idea. Rogers (1995) notes that not all innovations are necessarily easily broken into pieces in order to allow trialability. The more modular an innovation, therefore, the more easily the change agent can offer limited portions of it to potential adopters on a trial basis.

2.2.2.5 Observability

Observability refers to how easy it is for potential adopters to view the innovation in use by social group peers. Of particular importance is the observability of the benefits of the innovation. Group members are able to make better informed decisions if they are able to discuss the innovation, but they are only able to do this if it is observable.

The following list of generalizations is adapted from those prepared by Rogers (1995). Based on the characteristics described above, these generalizations can help to predict the rate at which an innovation will be adopted, and can also be used to help understand why a given innovation may or may not have been readily adopted.

- The rate of adoption of an innovation is positively related to its relative advantage, as perceived by members of the social system.
- The rate of adoption of an innovation is positively related to its perceived compatibility.

- The rate of adoption of an innovation is negatively related to its perceived complexity.
- The rate of adoption of an innovation is positively related to its perceived trialability.
- The rate of adoption of an innovation is positively related to its perceived observability.

2.2.3 Communication Channels

The second main element in diffusion of innovation theory is the communication channel. This element considers the means for the distribution of information about the innovation to and throughout the social group targeted for adoption. Rogers (1995) suggests that if the intended outcome is to make the social group aware of an innovation, then mass-media types of communication are most effective. Individual adoption of some new idea is most likely to occur, however, if individuals are able to learn about the idea from observation of near peers who have already adopted the innovation and are therefore able to offer an evaluation. Such interpersonal channels involve face-to-face communication and are most likely to be effective if those involved are homophilous, or similar to each other in terms of socioeconomic status, education, ethnic background, or other important ways that create trust and suggest shared experience. Rogers notes that most diffusion investigations have concluded that decisions to adopt are less likely to be made on the basis of a scientific evaluation and more likely to reflect subjective evaluations made by near peers. He argues that “this dependence on the experience of near peers suggests that the heart of the diffusion process consists of the modeling and imitation by potential adopters of their network partners who have adopted previously” (18). While such attention to peer relationships is important, it neglects the considerations that networks or individuals are not completely homophilous and that the relationships

within a network are more nuanced. A fully homophilous adopting group would more likely experience a fully predictable rate of adoption, but that is clearly seldom the case. A section near the end of this chapter looks more carefully at network theory in order to provide a better understanding of how networks influence the communication process.

2.2.4 Time

The third element of diffusion of innovation theory is time. Rogers (1995) considers time in the following three ways: in terms of classifying the adopters according to when they adopted relative to others; in terms of adoption of innovation being a process; and finally in terms of rate of adoption within the social group. Each of these three factors is examined more closely below.

2.2.4.1 Innovation Adopter Categories

Rogers (1995) groups adopters of a given innovation into five categories according to how quickly they adopt the innovation relative to others in the social group. Each of these categories and a brief description of their members' likely characteristics are presented below.

2.2.4.1.1 Innovators

Innovators make up the first 2.5 percent of the group to adopt a given innovation. This small group is likely to be more cosmopolitan, looking for ideas or adventures from outside their own social group. These individuals are often responsible for launching a new idea within their own social group and will likely have the financial resources to

absorb greater risk than some others. They are frequently more comfortable with uncertainty, which contributes to their lower aversion to risk. Along with managing uncertainty is an ability to grapple with more complex ideas. A higher level of technical ability helps to operationalize the new idea. Although innovators are often responsible for the introduction of the idea to their social group, they are frequently viewed as at the edge of, or just outside of, that group.

2.2.4.1.2 Early Adopters

Early adopters make up the next 13.5 percent of the group. This group is very influential in the overall success or failure of an innovation, given that they are central in the communication networks and are often the source of subjective evaluation of the innovation for other potential adopters. Rather than being cosmopolitan, this group is best described as local, being fully integrated in the local social system. They are respected by their peers because of their previous success and their judicious decisions, and therefore often serve as role models for others. This group provides a basis for observation by others and in doing so, decreases the uncertainty about the new idea.

2.2.4.1.3 Early Majority

This category represents the next 34 percent of adopters and comes just before the average member of a system. Members of this group interact frequently with their peers, but are unlikely to be seen as leaders among them. This group proceeds with a determined and deliberate willingness to innovate, but only after careful and thoughtful

examination of the idea. Members of the early majority play an important role in connecting the early and the late adopters.

2.2.4.1.4 Late Majority

The late majority is the fourth group and comprises the next 34 percent of adopters, which come just after the average member of the group. Adoption is not an easy process for this group, which usually waits until most uncertainty and risk associated with the innovation has been removed. This apprehension is often reflective of limited resources and possibly a lesser ability to understand the innovation, particularly if it is complex.

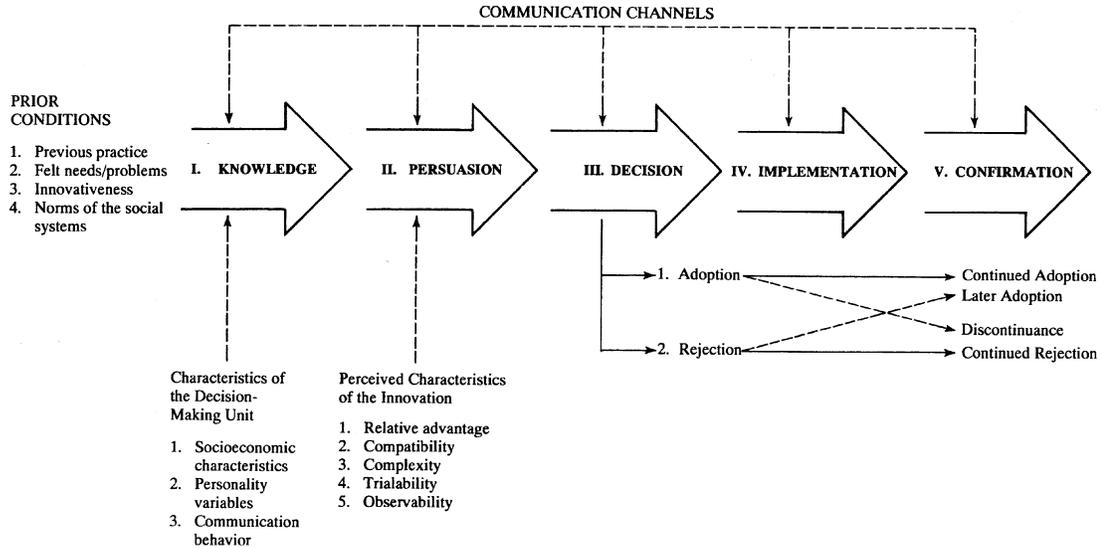
2.2.4.1.5 Laggards

Laggards represent the final 16 percent of a group choosing to adopt an innovation. This group is typically suspicious of innovation and more comfortable with looking at how things have been done in the past rather than trying out new ways of doing things. Members of this group are often quite isolated, not only from outside influences but even from others within their social group. Because of limited resources and a high aversion to risk, this group will not adopt an innovation until all uncertainty has been removed.

2.2.4.2 The Innovation Decision Process

The decision to adopt a new technology or idea is often not a one-time, either/or event. More likely, the potential adopter will move through a process before eventually making a decision, albeit one that may ultimately change. Rogers's illustration of the innovation decision process is presented in figure 2.1.

Figure 2.1: Stages of the Innovation Decision Process



Source: Rogers (1995, 163).

It is clear from figure 2.1 that a number of factors can influence the adoption decision at different times. It is also useful to recognize that this process is not necessarily linear, but that decisions can be and are reconsidered and worked through repeatedly.

2.2.4.3 Rate of Adoption

The third specific way in which time is involved in the diffusion of innovations is with regard to the rate of adoption. Rate of adoption measures the relative speed at which an innovation is adopted by a social group. Such a measure is typically captured by a logistic or S-shaped curve on a two-dimensional graph, with time on the horizontal axis and the percentage of adopters shown on the vertical axis. The slope of the curve will vary

depending on how quickly a given group adopts the innovation, with a steeper slope implying a higher rate of adoption at that point in time. The relative speed is influenced by the characteristics of the innovation as described earlier. This means of analysis allows the study of a whole system rather than only the individuals who comprise it.

2.2.5 The Social System

The final element in the diffusion of innovation is the social system into which the innovation is being introduced. Rogers and Scott (1997) define a social system as

a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems. The social system constitutes a boundary within which an innovation diffuses” (np).

Understanding diffusion requires an examination of how the structure of the social system affects that process. Other issues in this arena include system norms, opinion leaders and change agents, types of innovation decisions, and finally, the consequences of innovation. Each of these topics, as identified by Rogers, is examined more closely below.

2.2.5.1 Social Structure

Social structure is the patterned arrangements of units within a social system that give it stability, regularity, and predictability. A less formal type of communication structure exists within the interpersonal networks, and in part, defines communication channels. The social and communication structures can help or hinder the diffusion of a given innovation.

2.2.5.2 System Norms

System norms define a range of acceptable behavior within a social group. Such established patterns can make an innovation acceptable or not to potential adopters. System norms can act at various levels from local to global. Innovations that conflict with system norms will either be stalled completely or will require a change in the norms before adoption occurs.

2.2.5.3 Opinion Leaders and Change Agents

Opinion leaders are members of the social group who have the technical competence and social accessibility to informally influence the choices and behavior of other individuals. These leaders have the power to facilitate or inhibit the adoption of a new idea. Opinion leaders are typically better informed, of higher social status, and likely more innovative than many of their peers. They are at the center of communication networks and are expected to abide by system norms.

Closely related to opinion leaders are change agents. These people are typically professionals working on behalf of an agency or organization that is attempting to introduce an innovation. Examples of change agents might include extension agronomists, marketing executives, or in some cases, government bureaucrats. Because change agents are often perceived to be different from members of the social group, they are likely to be subject to suspicion. Change agents will often work closely with local opinion leaders, therefore, to help achieve adoption goals.

2.2.5.4 Types of Innovation Decisions

The manner in which innovation decisions are made is often reflective of who holds the decision-making power. In some cases, the decision to adopt is the choice of the individual and is optional to the extent permitted by social norms. Put simply, the decision-making unit is the individual. In other instances, innovation choices become collective decisions. The decision-making unit is the system or group, and all members must abide by the decision once it is made. A slight variation of this model would allow individuals to decide, once the group decision is made, if they want to remain a part of the core group and abide by the decision. Another scenario is one in which the decision to innovate is made by some given authority and the individual members are required to conform. In such a case, decision-making authority is in the hands of a few individuals who possess technical expertise and the power to impose a given idea.

2.2.5.5 Consequences of Innovation

Rogers (1995) suggests that it is important to consider the consequences of an innovation when trying to understand how or why the process unfolded as it did. This will also help in predicting or planning future efforts. Rogers identifies three categories of consequences related to the decision to adopt or not adopt an innovation. The first is that of desirable versus undesirable outcomes, which examines whether the effects of the innovation are functional or not. The second type of consequence is that of direct versus indirect, which considers whether the effects are an immediate result of the innovation or a secondary product of the original results. Finally, anticipated versus unanticipated consequences considers whether the outcomes were as predicted or if there were some

unintended outcome. While change agents and opinion leaders typically introduce an innovation expecting it to have desirable, direct, and anticipated results, it does not always happen this way. To fully understand the diffusion of an innovation, therefore, it is helpful to examine the initial intent as well as the ultimate result.

2.3 Path Dependency

2.3.1 Introduction

A typical theoretical examination of solutions to economic problems assumes that rational human beings will select the one with the most efficient outcome. If a suboptimal solution is at first selected, the assumption is that the natural balancing nature of the market-place will correct this initial error by moving to the most efficient solution. In reality, however, we regularly find examples at various levels in which apparently suboptimal or inefficient solutions have persisted. Path dependency, and the resulting state of “lock-in,” help to explain why such seemingly irrational choices persist.

It should be noted that the “typical” examinations mentioned above are rooted in standard neoclassical economic theory, which is based on an assumption of diminishing returns. In contrast, some economists such as Brian Arthur (1988, 1994) and Paul David (1985) have challenged this assumption, arguing that in certain circumstances, increasing returns are possible and that the resulting implications are immense. Foremost among these is the possibility for multiple equilibrium points in the standard supply and demand system. Implicit in this suggestion is that some of these equilibrium points are necessarily sub-optimal. In order to explain how such conditions might emerge and more interestingly, survive, requires a closer examination of the notion of increasing returns.

2.3.2 Increasing Returns and Economies of Scale

With diminishing returns, after a point of maximum average productivity, each successive unit of a variable factor of production adds less to the total product than did the previous unit of that input. In contrast, in an increasing returns scenario, each successive use of a fixed input grows more efficient. Put another way, economies of scale are achieved through the repeated use of the fixed input. The idea of economies of scale simply implies that the average cost of production drops as output increases. The more often something is used, the more efficient its use becomes because additional units can be produced without having to increase the input costs proportionately. The repeated use of a particular organizational form becomes increasingly efficient or affordable, for instance, as the fixed cost of its development is spread over a greater number of uses. Franchising, wherein tried and tested applications of business enterprises are used to replicate earlier successes, provides a clear example to support this logic. It is obviously more efficient for a McDonald's restaurant in a new location to follow the successful strategies of its cousins in other locations, as the costs associated with developing experience are reduced or eliminated.

2.3.3 Positive Feedback

Arthur (1994) suggests that while increasing returns are possible in sectors that experience positive feedback such as high technology, they are unlikely in resource-based sectors, which are limited by fixed supply. In general terms, positive feedback is a phenomenon in which some action in a particular direction produces results that support or encourage further action in the same direction (Jacobs 2000). Positive feedback in economic terms implies that the more a good or service is consumed, the greater the

demand for it, and the greater is the corresponding supply that is created. This is very different from a diminishing returns scenario, where supply and demand are finite. Arthur (1988) suggests that positive feedback or increasing returns

usually are variants of or derive from four generic sources: large set-up or fixed costs (which give the advantage of falling unit costs to increased output); learning effects (which act to improve products or lower their cost as their prevalence increases) (Arrow 1962; Rosenberg 1982); coordination effects (which confer advantages to “going along” with other economic agents taking similar action); and adaptive expectations (where increased prevalence on the market enhances beliefs of further prevalence) (10).

The fax machine is a good example of increasing returns from within the electronics and communications industry. The more the fax machine was used, the greater its demand became. It grew increasingly advantageous, particularly for people in business, to own and use a fax machine, since many of the people or organizations they communicated with were already using them. The demand prompted manufacturers of fax machines to increase production, making possible even greater use of this technology, which in turn spurred greater demand and so on.

2.3.4 Path Dependency and “Lock-In”

Arthur (1994) describes path dependency as a process that is started by some initial advantage or nudge that gives one product or service an advantage or lead over other reasonable substitutes. Just because a preferential choice emerges, however, does not guarantee that the most efficient economic outcome will result. In fact, because particular outcomes are so strongly affected by small initial advantages, once an advantage is created, it is likely to influence future choices through a positive feedback loop, creating a growing advantage for that product. Each successive time the same choice is made,

additional economies of scale are realized, thus making it increasingly likely for the same choice to be repeated.

A common market-place example of such an occurrence is the dominance of VHS video format over the arguably superior Beta format (Arthur 1994). In that case, an early advantage for VHS made it increasingly favorable for consumers to choose it over other options. As more consumers purchased VHS-format players and recorders, the demand for movies in this format also grew and was quickly met. The greater availability of VHS-format movies spurred greater demand for VHS recorders and players, and this cycle took on a life of its own with self-reinforcing characteristics.

The path dependency process results in a state known as “lock-in,” in which the relative advantage or lead of one product or service over its rivals is so great that it is difficult if not impossible to overcome. In the video format example above, VHS became the format of choice and Beta was never able to truly compete. In examining lock-in as it applies to economics, Arthur (1988) considers whether it is possible to “break free” from an inferior equilibrium. Drawing from the world of chemistry, he borrows the concept of “annealing” to label efforts to break free from lock-in. Arthur argues: “There is rarely in economics any mechanism corresponding to ‘annealing’ (injections of outside energy that ‘shake’ the system into new configurations so that it finds its way randomly into a lower cost one)” (16). He further contends that the likelihood of exit from an inferior position depends on the nature of the self-reinforcing mechanisms and whether or not the advantages characteristic of the original choice can somehow be replicated or transferred to the alternative option.

2.4 Network Theory

It is useful to consider how individuals are positioned and connected within the social group. The group or community can be thought of as a network, and it is therefore important to consider how such a network functions. Network theory posits that by interacting with the nodes of the network to which they belong, the initiators of communication are exposed to a broader group of contacts (Granovetter 1973). This access to more contacts enables or results in the accumulation of additional information and presumably an enhanced ability to make innovation decisions.

The characteristics of the components or nodes of networks are likely to affect how the network functions (Granovetter 1973; Valente 1994). It is intuitive that different nodes with different characteristics will be more or less efficient at spreading the idea or innovation on to the next node. One only needs to imagine two individuals, one outgoing and quick to share information and the second conservative and less eager to pass it along, to see how such differences might promote or impede diffusion.

The nodes are important, but the nature of the relationships or bridges between them are equally critical. A number of factors influence the nature of interaction and the ultimate effectiveness of the network in a diffusion exercise. These include: differences in the relative strength or weakness of the relationships (Granovetter 1973); whether or not the relationships are horizontal, within a peer group, or vertical, extending outside the peer group (Murdoch 2000); and the types of interdependencies encapsulated by the relationships (Lazzarini, Chaddad, and Cook 2001). Likewise, the relative density of a network affects the likelihood and nature of interactions between various nodes (Valente 1994).

Network analysis offers insight on how, when, and with whom, interpersonal communication occurs within a given social system. In his exploration of network models, Valente (1994) provides threshold and critical-mass models to identify the “tipping points” at which individuals and social systems choose to adopt innovations.

As Valente describes it:

The history of research on the diffusion of innovation has been a gradual recognition of the role of personal networks in influencing adoption behavior. Threshold models posit that individuals have thresholds of adoption at which interpersonal influence is effective at persuading them to adopt. Critical mass models posit that social systems have a critical point of adoption at which the system is self-sustaining (134).

Valente goes on to explain a self-sustaining system by using the analogy of a riot, which requires enough people and sufficient stimuli to initiate, but which continues without the need for additional stimuli or added people. In the case of diffusion, a sufficient portion of the social group needs to adopt in order for continued and possibly even full adoption to occur without additional diffusion stimuli.

Understanding network theory adds to the understanding of communication channels, thus helping to illustrate the diffusion of innovation process. Network theory also helps address concerns with diffusion theory, which question an approach that implies consistent and predictable distribution of an idea within a homogeneous social group.

2.5 Summary

This chapter provides a theoretical framework for understanding how and why new ideas or innovations are adopted and then subsequently spread. It also presents a framework for explaining why the use of certain innovations is replicated in favor of other options.

Network theory was introduced to offer a better understanding of the complexities of communication channels, which influence the diffusion of innovations.

The next chapter presents three case studies that illustrate the realities of the “new” agriculture. The cases have some similarities, but also some important differences from each other. A later chapter analyzes these case studies, applying the theories of diffusion of innovation and path dependency as described above.

CHAPTER THREE: CASE STUDIES

3.1 Introduction

Many farmers have recognized the need to have their role in the agricultural industry evolve into one that features more than mere commodity production. These producers have embraced advice calling for diversification, horizontal and vertical integration, including involvement in value added processing, networking, and in general, a more systematized or “business” approach to their farming enterprises, which may also include the marketing of their agri-food products. A multitude of ventures have been pursued utilizing various business models and organizational forms. These attempts have ranged from ventures involving thousands of producers and worth hundreds of millions of dollars to far more modest enterprises involving only a few neighbors and relatively small sums of money. These ventures have involved practically every imaginable commodity and have resulted in innovative uses and treatment of these commodities.

In the Great Plains area of North America, certain types of ventures have been more frequently tried, including ethanol production plants, pasta processing facilities, alfalfa dehydrating plants, oilseed crushing plants, and various types of livestock production and processing ventures. While the examination of any of these ventures could offer useful insight into the changes occurring in agriculture, for the purpose of this investigation, three particular organizational models are profiled in the following case studies.

The first case study examines producer-owned inland grain terminals in Saskatchewan. The second case looks at hog production facilities in Saskatchewan and focuses on a community-based model introduced by the Quadra group, which Saskatchewan Wheat Pool through Heartland Pork Management tried to follow. Finally, the third case features the New Generation Co-operative model for value adding processing. Much of this latter case focuses on the development and application of this model in the Upper Midwest of the United States. In each of the first two cases, the organizational form has been used repeatedly in Saskatchewan. Despite development efforts, however, New Generation Co-operatives have been slow to catch on in this province, and this case therefore provides an interesting contrast to the first two.

These three particular cases were studied for a variety of reasons. They offer pre-eminent examples of farmer-owned enterprises established during that time period roughly covering the last three decades. While many other examples exist, these three stand out as exemplary cases of farmers' responses to a changing environment. They are all a product of that slice of the history of agriculture defined earlier as the "new agriculture." In other words, they were a result of farmers recognizing the need to adjust their roles in the agricultural chain. Also, both producer-owned inland terminals and the NGCs, at least in the United States, have now been in existence for about thirty years and therefore provide an adequate time frame for investigation and reflection. Further, NGCs provide the opportunity to contrast the less-than-impressive record of development in Canada with the flurry of activity witnessed in the United States. As well, the Saskatchewan NGC experience provides a contrast to the impressive record of inland terminal development and community-based hog barn development in this province. Finally, there is the

opportunity to contrast the experiences of the two industry players within the community-based hog initiative case. Quadra provides an example of a successful development strategy to compare with Saskatchewan Wheat Pool's less successful record.

The case studies for the grain terminals and for New Generation Co-operatives are roughly structured to coincide with the framework offered in the diffusion of innovation theory outlined in chapter three. Specifically, an attempt is made to categorize the groups involved in the various enterprises as either "the innovators" or as "the majority." Given the small number of individual ventures and the manner in which they fit within the larger development framework, this categorization scheme was less applicable and therefore not attempted with the hog barn case study.

The information contained in the following case studies was collected from the publicly available sources identified within each case and from a series of interviews with individuals involved in the particular ventures. These individuals have an intimate understanding of how the models developed, due largely to their involvement in various official capacities with their respective enterprises. Because the interviews were conducted on the condition of maintaining the anonymity of the participants, these individuals are not identified.

3.2 Producer-Owned Inland Grain Terminals

3.2.1 Introduction

Producer-owned inland terminals use local investment to finance the construction and operation of large grain-handling and storage facilities. While these facilities are similar to those being built by the major grain-handling companies in their efforts to consolidate

their systems, the producer-owned ventures have typically developed in reaction to producer dissatisfaction with the large companies and with the grain-handling system of which they are part. Proponents of the producer-owned ventures typically identify a need for greater competition in the grain industry, and believe that the construction of terminals will provide more choices in how they market their grain, while giving producers greater control over the industry. There are currently eleven producer-owned inland grain terminals in Saskatchewan (see figure 3.1). The first to carry the idea for a producer-owned inland terminal through to fruition in Saskatchewan was a group from Weyburn.

3.2.2 The Innovators

Weyburn Inland Terminal (WIT) was the first venture of its type to be built in Saskatchewan. At the time that Weyburn-area farmers were discussing the idea of a producer-owned inland terminal in the early 1970s, at least a hundred similar ventures already existed in the United States, and more were being added at a rate of between five and seven per month (Driver 2001). These American ventures provided ideas for the design and operational aspects of WIT, but Canadian prairie producers were farming in a different business climate and were subject to unique challenges, circumstances, and thus motivations, which ultimately factored into the shape and form of WIT.

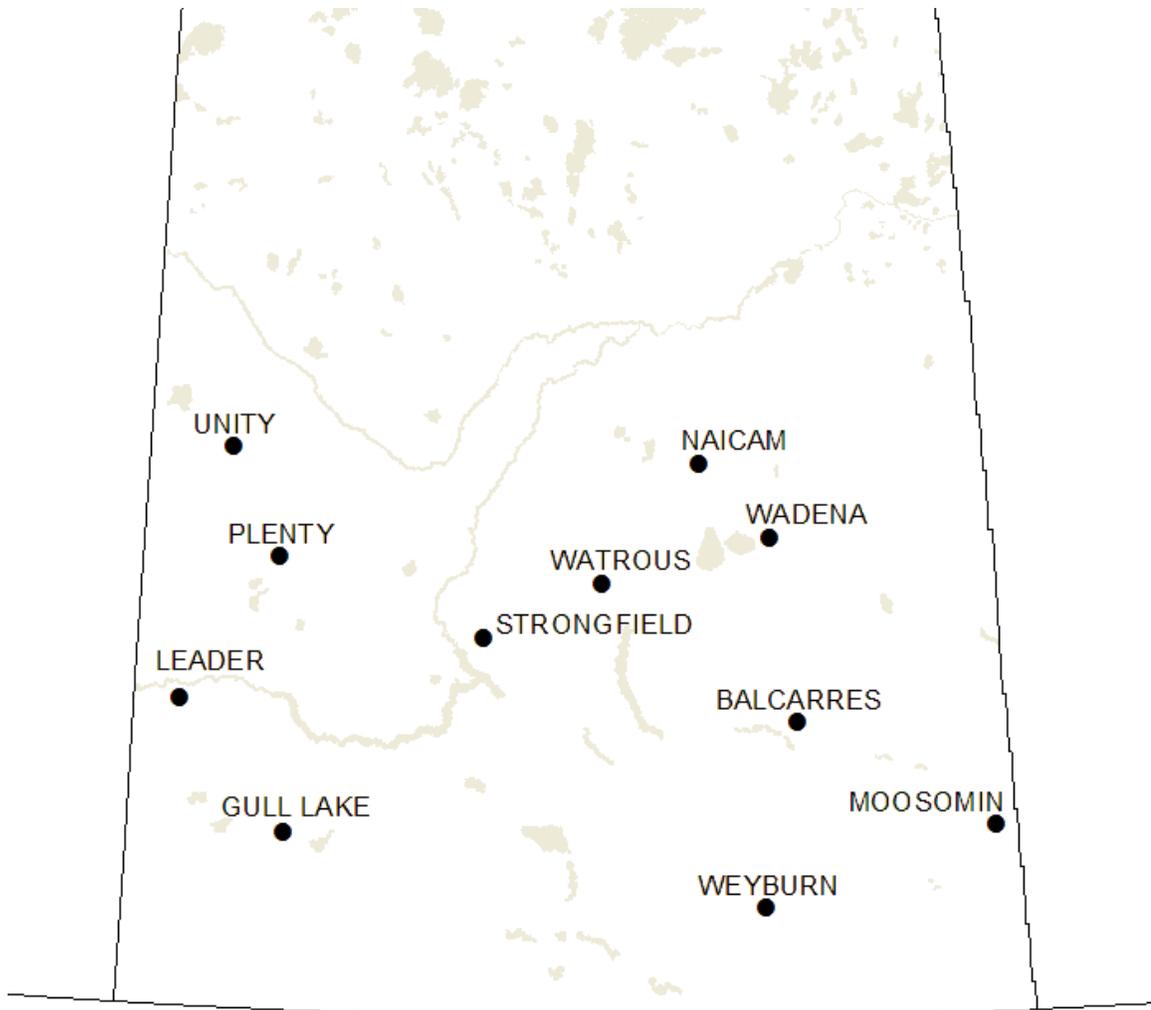


Figure 3.1: Producer-Owned Inland Terminals in Saskatchewan

Many of the principal figures involved with planning WIT were already members of the Palliser Wheat Growers Association (PWGA), which today has become the Western Canadian Wheat Growers Association (WCWGA). This is noteworthy because many of the issues that an inland terminal was expected to address were issues of primary concern to the PWGA. Driver (2001) summarizes some of these issues in common as follows:

Led by the Wheat Growers Association, the common complaint in southeastern Saskatchewan was that Canada's grain-handling system was inefficient and costly, rewarding elevators for storage rather than for the movement of grain. Farmers in that area of the country were hungry for a more responsive, competitive system (2).

Among the specific concerns were the need to grade wheat according to levels of protein and to reward farmers for higher protein levels, and the need to clean grain close to the point of production, rather than paying to ship dockage to the ports where it was sold for feed. Ironically, farmers were being penalized and the grain companies were gaining additional revenue through the existing practice.

The grain-handling companies were too often using their facilities to store, rather than to ship grain. As a result, the facilities were often full to capacity, and even if the Canadian Wheat Board announced and increased quota, the facilities were unable to accommodate additional deliveries from farmers. In the worst instances, and reminiscent of the stranglehold that grain companies had over producers at the turn of the twentieth century (Patton 1928; Fowke 1957), grain companies would claim to have room to receive only lower grades of grain, thus leaving farmers little choice but to sell higher quality grain at the prices paid for the lower grades.

Another aspect of grain-handling inefficiencies was the distribution of rail cars to the grain companies and the absence of any motivation to load and ship larger train units of grain cars. The Weyburn group suggested that an inland terminal could realize efficiencies by loading train units of fifty to one hundred cars. They also argued that any savings realized through such practice should go to the producers of the grain rather than to the grain-handling companies.

In short, the Weyburn group felt that they could improve the grain-handling system by building a high throughput terminal that focused on moving rather than storing grain, with the ability to test for grain protein levels, and that could clean and dry grain to export standards. A producer-owned terminal would be the mechanism to achieve such advantages. When asked why the Saskatchewan Wheat Pool, the predominant grain-handling company in Saskatchewan and a farmer owned co-operative, could not be such a mechanism for change, the leader of the producer group, Art Mainil (1973), replied that, “the Pool has lost touch with its members. He said it has become a vested interest, with its officials more interested in building up the corporate structure than in farmers’ problems” (Driver 2001, 10).

While many of the proposed improvements and changes have since gained the favor of most grain-industry players, such suggestions were not uniformly popular at that time. Indeed, from the very onset of the WIT concept, the promoters were met with opposition from a wide array of stakeholders. Those opposed to the terminal included groups that claimed to speak on behalf of farmers, such as Saskatchewan Wheat Pool and the National Farmers Union, but also included groups with interests beyond the farm gate, such as the provincial government, which at that time was formed by the New Democratic Party, the United Church of Canada, and the Catholic Church. The Weyburn initiative was seen as the start of what would ultimately be a network of such producer-owned inland terminals across the prairies. It was feared that such development would lead to the end of the Canadian Wheat Board, the closure of local elevators, rail line abandonment, the destruction of roads from trucking, and ultimately would spell the death of small towns.

The federal government, observing this opposition, resisted implementing policy to encourage the development of inland terminals (Driver 2001). The promoters of the terminal used opposition to their venture as evidence in support of their argument for needed change. One early organizer even suggested that the opposition created a heightened awareness of the project, and that this added attention was ultimately beneficial in gaining the necessary support for the initiative (Driver). Despite the very visible opposition, the project moved ahead.

The terminal project officially began in 1972–73 with the sale of twelve hundred memberships in the producer association at a price of \$100 each. These funds allowed the organizers to move the organizing process forward. The group accessed federal funding to conduct a feasibility study, which was conducted by a firm owned by Rod Bryden, an important character in the WIT story. Bryden, a lawyer and former law professor at the University of Saskatchewan, was closely connected with senior officials in the federal Liberal government of the day. He had served as campaign manager for Otto Lang, who was elected to the federal government and later named minister responsible for the Canadian Wheat Board. Bryden became Lang's special assistant and quickly organized and led the Grains Group, which was an interdepartmental advisory group charged with examining grain handling on the prairies. The Grains Group favored, but at the same time resisted, the introduction of policy to encourage the development of inland terminals. It was also the Grains Group that, at least in part, funded the feasibility study for WIT (Driver 2001). The fact that payment for the first installment of the feasibility study was issued to the Palliser Wheat Growers Association offers a clear indication of the close ties between WIT and that association.

One of Bryden's first jobs after leaving the government was to conduct the WIT feasibility study. This study endorsed the development of WIT, offered suggestions about operational features of the facility such as throughput and drying and cleaning capacities, and recommended that the venture be organized as a co-operative in order to expedite clearance through a securities review and to exploit certain tax advantages. The interim board of directors, after serious debate, opted to structure the new organization as a public company rather than a co-operative, mainly because it was felt that any individual's level of control needed to reflect their level of investment (Driver 2001).

Bryden remained in the picture, offering to prepare a prospectus for the venture for no charge, but with an agreement that his firm would retain the rights to the feasibility study and the plans for the construction of the terminal. The prospectus, completed in late 1974, stipulated that Bryden would work to establish important relationships with the Canadian Wheat Board, the Canadian Grains Commission, Canadian Pacific Railways, and various private grain companies. Bryden had already gone into partnership with the Montreal-based construction company Tectrol, which eventually designed and constructed the terminal. While Bryden was clearly positioning himself to lead the development of future inland terminals, his involvement in WIT was also advantageous for that particular project. Bryden was able to use his political contacts and influence to move the project forward and at one point, while trying to secure early developmental funding, even arranged a meeting for the project leaders with Otto Lang and then Prime Minister Pierre Trudeau (Driver 2001).

The group considered various types and sizes of terminals and toured several American facilities before finally deciding on a concrete facility with a twenty-million-bushel throughput capacity. The construction contract with Techtrol was for the fixed sum of \$4.607 million. Producer investors were required to raise \$1.6 million and narrowly achieved that goal in the final days before the deadline imposed by the Securities Commission. Shares were priced at \$1,000 each, made available to any producer with a Canadian Wheat Board permit book, and were sold by the twenty-eight members of the founding board of directors. It is important to note that by 1973, most grain prices had nearly tripled from a few years earlier and that farmers at this same time held unusually large amounts of grain in storage (Saskatchewan Agriculture and Food 2000). These factors combined to provide producers with a higher than usual amount of disposable income available for investment. WIT was officially incorporated on 29 May 1975 and construction began on 16 June of that same year (Driver 2001).

Because of construction delays related to inclement weather, labor disputes, and revisions to original designs, the final cost of construction was \$5.5 million. Disputes over the difference between the fixed contract price and the final price would last for years and led to ongoing financial challenges for the terminal owners. WIT officially opened for business on 4 November 1976. The original facility, with a staff of eleven employees, could receive 30,000 bushels per hour and clean and dry 4,000 bushels and 2,500 bushels respectively in the same time period. WIT established a grain-handling agreement with Cargill Ltd., which lasted until 1980, at which point a new arrangement was made with United Grain Growers. This later arrangement has, in various forms, lasted to the current day (Driver 2001).

The first few years of business were difficult for WIT. The organization struggled with financial issues related to construction cost overruns, legal challenges from contractors, and operating inefficiencies. In order to get WIT on a path to financial stability, an additional \$1.35 million was raised from shareholders in 1980. This was also the year that the venture first generated a profit. Low grain-handling volumes because of drought and insect infestations during the mid 1980s tested WIT's resolve, but by the later part of that decade the organization was on solid footing and consistently generating record annual profits. The terminal has survived various refinancing exercises, turned away attempts by Saskatchewan Wheat Pool to purchase it in 1986 and by United Grain Growers to enter an alliance in 1999, and expanded in both size and range of services.

Today, the terminal has approximately four times its original storage capacity, offers a full range of agricultural inputs, and processes grain screenings into livestock feed pellets. WIT continues to generate record profits when many other grain-handling companies are struggling, has very little debt, and is therefore able to regularly return substantial dividends to its shareholders. In its approximately quarter century of existence, WIT has overcome both internal and external challenges, but has consistently managed to introduce innovative services to producers in the area. Included in the list of industry firsts are:

- conducting protein testing and rewarding producers for higher quality grain;
- cleaning and drying grain to export standard at point-of-origin on the prairies;
- shipping fifty- and one-hundred-car-unit trains in order to capture transportation incentives;
- paying farmers for freight and a dockage incentive;
- showing elevator tariffs on cash tickets, enabling farmers to know exactly what they were being charged;

- constructing and selling condominium grain storage off the farm; and,
- assessing tariffs on a net weight basis, therefore not charging producers for handling dockage that was no longer being transported to port (Driver 2001).

While WIT was an important source for this type of operational innovation within the grain-handling industry, it was also a model of producer ownership and control that would be repeatedly replicated as farmers in other areas pushed for change.

3.2.3 The Majority

Since the formation of WIT, a number of producer-owned inland terminals have subsequently developed as a mechanism for producers to become more directly involved in the handling and marketing of the grain they grow. As various directors of these ventures agree, WIT provided the model on which its followers would depend and the individuals to whom they would look for advice. Like WIT, the new terminals are typically high-throughput, state-of-the-art facilities, capturing the benefits of cleaning, drying, and grading grain to export standards at the point of origin. They often have large condominium-style, on-site storage capacity and the ability to accommodate large train units, thereby realizing the benefits of transportation incentives. These ventures are multimillion dollar businesses that are owned, at least in part, by producers in the near vicinity of the terminal.

Each of the Saskatchewan examples is structured as a corporation, with the level of control held by any individual directly related to his or her level of investment. The organizations are governed by boards of directors representing the parties with vested stakes in the enterprises. Producers are not obligated to haul their grain to the terminal, but are motivated to do so by the desire to see the business in which they have invested

succeed, thus providing a return on their personal investment. Nonproducer investment in the terminals is allowed and is often promoted as a means to invest in the future prosperity of the host community. Given the high capacity/volume of these facilities, it is necessary to attract business from a large collection area, and grain-hauling incentives are therefore frequently provided to producers from farther afield to attract their business. Most of the terminals have built integrated condominium storage facilities and have sold these to producers as yet another mechanism to aid in financing the original construction of the terminal as well as their subsequent expansion.

While the second terminal was not established until sixteen years after WIT started business, the remainder followed in relatively short order (see table 3.1). Subsequent producer groups interested in building terminals typically looked to WIT for the model to follow when designing their own facilities, operating systems, and the range of services that would be provided. Farmer investors in the North East Terminal, for instance, indicate that they were waiting for a proven record of success at WIT before embarking on their own enterprise.

While each of the subsequent terminal ventures looked to WIT as a model, and in each case the groups were advised to “go it alone,” they inevitably chose, likely out of necessity, to engage in some sort of ownership relationship with an established grain handler. Partnership with an established industry player not only provided a source of additional financing, but also offered the benefits of economies of scale, valuable industry experience and contacts, and access to port facilities that the prairie producer groups lack. It is only recently that a second terminal, Prairie West Terminal, has

regained full farmer ownership (Ewins 2002). The merger of Agricore Co-operative Ltd. and United Grain Growers left the new company—Agricore United—with interests in comparable facilities very close to each other. Selling their interest in Prairie West Terminal back to the producers was a logical strategic choice.

Table 3.1: Producer-Owned Inland Terminals in Saskatchewan

Terminal	Location	Opening Date	Industry Partner at Start
Weyburn Inland Terminal	Weyburn	1976	None
North East Terminal	Wadena	1992	Cargill Ltd.
North West Terminal	Unity	1996	Pioneer Grain
Mainline Terminal Ltd.	Moosomin	1996	Cargill Ltd.
South West Terminal	Gull Lake	1997	Cargill Ltd.
Mid-Sask Terminal Ltd.	Watrous	1997	Pioneer Grain
Prairie West Terminal	Plenty	1998	Alberta Wheat Pool
Terminal 22 Inc.	Balcares	1998	Cargill
Great Sandhills Marketing Centre	Leader	1999	Sask. Wheat Pool
CMI Terminal J.V.	Naicam	2000	Agricore
Gardiner Dam Terminal	Strongfield	2001	Agricore

Information in this table is summarized from that provided by the Inland Terminal Association of Canada (ITAC 2002).

One individual who helped organize and who invested heavily in the North East Terminal described how much easier it became for subsequent projects to acquire debt capital from financial organizations. He described having to make countless presentations to bankers in an effort to drum up interest in his own group’s project, but noted that once this was

achieved, subsequent groups “had the banks chasing them,” wanting to be their financial services provider.

Even though the most recent additions to the list of producer-owned terminals have come in rapid succession, it is doubtful that replication of this model will continue at the same rate. The current consolidation of the grain-handling industry and the move by all major industry players to develop networks of large inland terminals has created an over-capacity on the Canadian Prairies (McKinnon 2002; Schroeder, Greenhouse, and Mason 2001). While Saskatchewan has seen a rapid uptake of the producer-owned inland terminal model, the neighboring provinces of Alberta and Manitoba have not. So far, only a couple of examples of this model are found in those regions.

In 1995, representatives of the various inland terminals formed a new umbrella organization called the Inland Terminal Association of Canada (ITAC) with a mandate to promote the common interests and goals of modern, efficient, high-throughput inland terminals. ITAC’s members are the ten terminals in Saskatchewan that have majority farmer ownership, which represents all but one of the producer-owned inland terminals in the province. Mainline Terminal, the one nonmember, has a majority ownership by Cargill Ltd., thus excluding it from membership. Together, ITAC’s member terminals handle more than 1.7 million tonnes of grain annually, including wheat, durum, barley, oats, canola, peas, lentils, flax, mustard, canary and sunflower seed, and rye. ITAC describes its members’ grain-handling facilities as “the realization of dreams of farmers, who through their own initiatives, innovation and capital, sought to make grain handling on the prairies more competitive, reliable and cost effective” (ITAC 2002).

In an ironic twist, with the current grain-car tendering process administered by the Canadian Wheat Board, producer-owned inland terminals are struggling to be competitive with the larger grain-handling companies (Ewins 2003). While part of the rationale for forming these terminals in the first place was to increase competition, these organizations are finding it increasingly difficult to operate in the environment they tried so hard to create.

3.3 Community-Based Hog Barns

3.3.1 Introduction

The following case study of community-based hog initiatives outlines the features of this organizational model and examines two organizations that have pursued such initiatives in Saskatchewan—Community Pork Ventures Inc., formerly the Quadra Group, and Heartland Pork Management Services, a wholly owned subsidiary of Saskatchewan Wheat Pool. This case study also examines the development and evolution of the community-based model and the current status of the two profiled organizations. To provide some context for these development efforts, this section begins with a brief overview of the Saskatchewan pork industry.

3.3.2 Saskatchewan's Pork Industry

With some important exceptions, the experience in Saskatchewan mirrors that in other provinces, and to an extent, that throughout most of the industrialized world. This section examines some of the global trends, but focuses mainly on the nuances found on the Canadian Prairies, particularly in Saskatchewan.

The hog industry in Canada during the past three decades has been changing rapidly. The number of hogs slaughtered in Canada increased from just under eight million in 1975 to more than twenty million by 2001 (Agriculture et Agroalimentaire Canada 2003). During approximately the same period, Canadian pork exports also increased dramatically, from approximately fifty thousand tonnes in 1976 to about four hundred thousand tonnes by 1997, and more than seven hundred thousand tonnes by 2001 (Statistics Canada 2003a). In 1999, Canada became the world's largest exporter of pork, overtaking Denmark, which previously held that claim (Pomerleau 2001). In general, world demand for pork was increasing, largely in Asia, and Canada was responding to the increased demand (Whittington et al. 1996).

While the number of hogs produced has steadily increased, the number of hog producers has decreased and the size of the remaining operations has grown substantially (Storey et al. 1996). Whereas hog production was often part of mixed farming operations—which might also have included a few cattle, some poultry, and grain production—it is now more likely to be a specialization. In the mid-1990s in Canada, 20 percent of the largest producers were supplying 80 percent of the country's total pork (Whittington et al. 1996).

While the circumstances on the Prairies mirror the remainder of the country, other factors contributed to the developments specific to this region. Saskatchewan, Manitoba, and to a lesser extent Alberta, have often been regarded as placing their principal emphasis on primary production rather than on value-added activity (Fulton et al. 1989). This tendency is usually thought to be a consequence of the Government of Canada's settlement policies, which encouraged primary production in western Canada, and

combined with subsidized grain transportation costs via the Western Grain Transportation Act (Crow Rate), stimulated profitable value-added processing of those commodities in central Canada (Fowke 1957; Fulton et al. 1989). When the Crow Rate was discontinued in the mid-1990s, prairie farmers were faced with a greater need to add value to the grain they produced in order to keep production viable.

The heightened sense of urgency to develop value-added agricultural processing on the Canadian Prairies, combined with the increased demand for pork, the removal of transportation subsidies for grains, supportive provincial government initiatives and policies, and readily available resources including water, land, and affordable feed, set the stage for expansion of the region's hog industry. With Alberta, and especially Manitoba leading the way, prairie hog production has grown and contributed to Canada's status as a leading producer and exporter of premium quality pork (Duckworth 2002).

The number of Saskatchewan pigs marketed increased from about eight hundred thousand in 1984 to about 1.8 million by 2001 (Statistics Canada 2003b). The Canadian Pork Council reported that in the year 2000, Saskatchewan accounted for about 8 percent of the pigs on Canadian farms. In 2001, 1,280 Saskatchewan farms reported raising pigs, with the average having 824 animals. This is a significant change from the 12,246 farms reporting an average of 40 pigs per farm in 1976 (Canadian Pork Council 2003). While these numbers help to illustrate the changing nature of pork production, Whittington et al. (1996) warn that such figures are misleading because even the smallest producer with a single pig is included in such counts and contributes to a undersized representation of an "average" farm. A more accurate picture is presented by the fact that in the year 2000,

more than 75 percent of Saskatchewan pigs were on farms with more than 2,653 animals, an increase from 50 percent reported just four years earlier (Canadian Pork Council 2003). This clear increase in the scale of pork production requires closer consideration.

Large-scale pork production offers producers benefits realized through economies of scale (Fulton and Gillespie 1995). Large-scale production allows producers to focus on specific genetics, feeding regimens, and health practices, all of which contribute to the production of the “designer pork” demanded by today’s consumer. Large-scale operators are also more likely to engage in forward contracting arrangements with processors, thus limiting some of the uncertainty of a market characterized by cyclical prices. In 1996, Whittington et al. identified “typical” farrow-to-finish farms as those in the size range of two hundred to twelve hundred sows per operation. Farms of this size produce four thousand to twenty-four thousand market hogs annually. Large, multisite operations have as many as twenty-five hundred to five thousand sows producing approximately fifty thousand to one hundred thousand market hogs annually. Such large-scale operations are capital intensive ventures. A report by Saskatchewan Pork Central in 2001 estimated the cost of a six-hundred-sow, farrow-to-finish, single-site hog initiative at between \$3.1 and \$3.5 million, while a five-thousand-sow, three-site, farrow-to-finish operation can cost as much as \$30 million (Possberg 2002). Involvement in such costly ventures by individual producers is usually unachievable and therefore requires mechanisms to allow developers to pool resources. The community-based hog initiative is one model that utilizes collective action and combined resources.

3.3.3 Community-Based Hog Initiatives

Community-based hog initiatives involve rural residents, particularly grain producers, as investors in the hog industry (Storey et al. 1996; Fulton and Gillespie 1995). The model that was first used in Saskatchewan was developed by the Quadra Group, from Outlook. Quadra's founding partners recognized the advantages that such an organizational form provided, and over time have tailored and modified the model to address a changing environment and an evolved industry. While this model was developed by Quadra, others, notably Saskatchewan Wheat Pool, have borrowed and adapted the organizational form for their own hog development initiative. The following sections review Quadra's development and application of the community-based model and Saskatchewan Wheat Pool's attempt to use it.

3.3.4 Community Pork Ventures Inc. (The Quadra Group)

The first to recognize the challenges and opportunities identified above were three Saskatchewan hog producers, who would later join ranks with an additional partner and become the Quadra Group. At the center of this group was Richard Wright, who is today president of Community Pork Ventures, the current incarnation of the Quadra Group. Wright and his partners saw the need for a new organizational form that would allow them and others to reap the benefits related to economies of scale. While each of the original three partners was a hog producer, each farmed in a different part of the province, and rather than begin their new venture in one of these areas, they opted to locate where doing so made most business sense. The group decided that Outlook, Saskatchewan, was the best choice because of its dependable, large water supply and the availability of a steady supply of feed grain.

The first venture this group undertook was the Elite Stock Farm, a six-hundred-hog breeding-stock multiplier unit that provided sows to Pig Improvement (Canada) Ltd. The three original partners raised \$3 million and began construction of the barn in 1989.

While it was not fashioned on the community-based model, Wright (2002) suggests that it was that project that got them thinking about larger-scale enterprises and new models for community involvement.

The group's second venture, and the first project established using the community-based model, was a finishing barn for the Elite Stock Farm barrows (castrated boars). Started in 1993, it was also located close to Outlook. This barn, eventually named Great West Stock Farm, was the beginning of what has grown into a network of eighteen pig-production businesses in Saskatchewan and Manitoba that come together under the Quadra banner, and which ship more than five thousand hogs per week. Table 3.2 identifies the fourteen community-based operations that are currently beneficially owned (as part of a share exchange with local investors) by Community Pork Ventures, the organization created in 2000 through a strategic alliance between Quadra and Premium Brands Inc., a Canadian food processing company. As shown in figure 3.2, eleven of these ventures are located in Saskatchewan. The following section describes the basic community-based model used with each of those barns.

Table 3.2: Community Pork Pig Production Corporations

Name	Location	Size of Operation
Beechy Stock Farms (1996) Ltd.	Beechy, SK	600 sows
Eagle Creek Pork Producers Ltd.	Plenty, SK	1,200 sows
Sask Valley Pork Producers Ltd.	Rosthern, SK	1,200 sows
St. Denis Stock Farm (1995) Ltd.	St. Denis, SK	600 sows
River Lake Stock Farm (1995) Ltd.	Central Butte, SK	600 sows
Great West Stock Farm (1996) Ltd.	Broderick, SK	1,200 sows
Norfolk Stock Producers (1996) Ltd.	Treherne, MB	600 sows
Hi-Point Stock Farm (1997) Ltd.	Cando, SK	600 sows
Sask West Pork Producers (1997) Ltd.	Unity, SK	600 sows
Kelsey Stock Farm (1997) Ltd.	Star City, SK	600 sows
Last Mountain Stock Farm (1997) Ltd.	Strasbourg, SK	600 sows
Pasquia Pork Producers (1997) Ltd.	Arborfield, SK	600 sows
Southwest Stock Farm (1997) Ltd.	Melita, MB	600 sows
Whitewater Swine (1997) Ltd.	Boissevain, MB	600 sows

Adapted from Community Pork Ventures *Annual Report* 2001.

The particular model developed by Quadra was a one-site, six-hundred-sow, farrow-to-finish operation, which involved all phases of hog production, including the milling of feed. While the scale of most recent examples of this model has doubled to twelve hundred sows, its one-site nature remains unchanged.

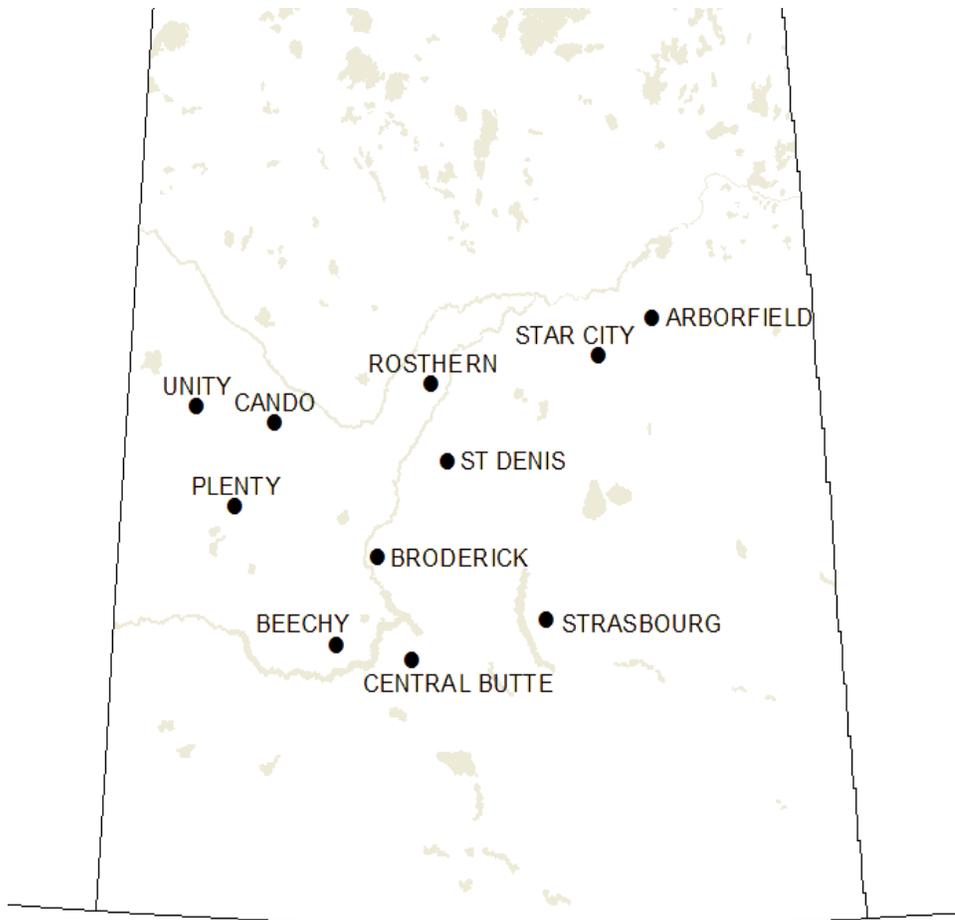


Figure 3.2: Saskatchewan-Based Community Pork Pig Production Corporations

The basic Quadra organizational model for a community-based hog initiative involves a local proponent group, Quadra Management Services, and an investor group. In the model's typical form, the local proponent group, usually a small collection of producers and community leaders looking to develop a local market for feed grain and to generate economic activity in their community, approaches Quadra with an interest in exploring the development of a hog venture. Quadra provides a business model and technical expertise, while the local group serves as a source of investment equity and also as a

conduit to additional investment from the community. The local group incorporates and enters a general partnership agreement with Quadra. This entity then enters a limited partnership arrangement with other community investors solicited by the proponent group (see figure 3.3).

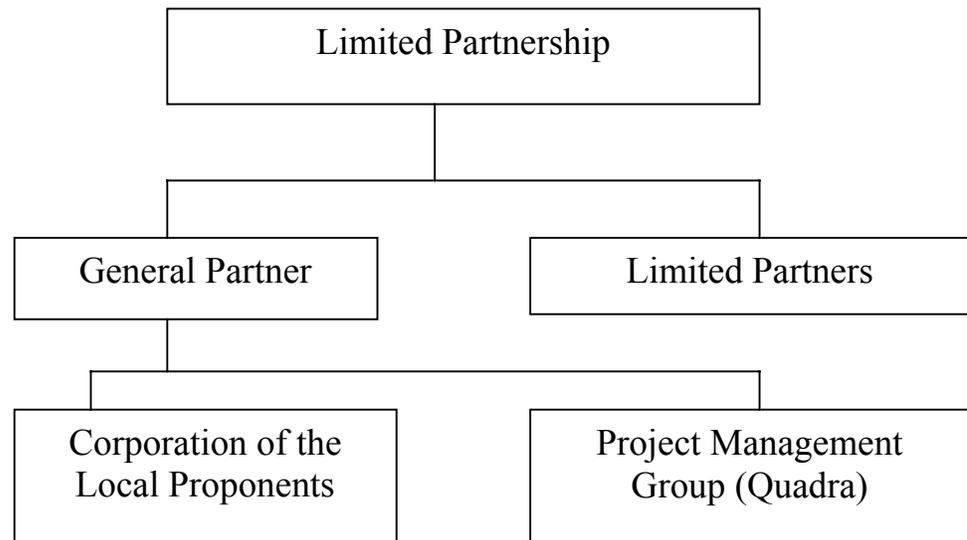


Figure 3.3: Quadra Model of Community-Based Ownership Structure

Adapted from Storey et al. 1996, 94.

Remaining capital requirements are met through the usual debt-financing means. During the construction phase of the project and during the first few years of operation, the venture is expected to incur losses. The tax treatment for a limited partnership structure allows these losses to be flowed back to the limited partners, thus allowing these individuals to realize personal tax advantages on their investments. Once the venture begins to generate positive revenues, it is restructured as a corporation thus becoming subject to a lower corporate tax rate. This conversion from limited partnership to corporation is an integral and planned feature of the community-based model (Wright 2002).

By using this model, each of the parties involved stands to benefit in a variety of ways. While local producers are able to diversify their operations without having to actually become hog producers, they can also expect to reap medium returns on their investment (Marceniuk 2000). Grain producers also have an opportunity, although no obligation or right, to sell feed grain locally. Those producers in close proximity to the barns who have effluent from the operation injected into their fields also gain from reduced fertilizer input costs.

The development group (Quadra) benefits by accessing local capital and grain. It is also typically faced with less opposition to the barn than might be the case with other developers. This warmer reception in part reflects the fact that the community initiated contact with Quadra, rather than the other way around, and also that community members are involved in open discussion of the venture and must ultimately vote on whether the project proceeds. Raising local capital also becomes easier, since it is the members of the local proponent group who act as agents for the general partnership and seek investment in the limited partnership from others in the community.

As mentioned earlier, the local investors who participate in this venture through the limited partnership benefit not only through returns on their investment, but also from being able to apply losses accrued early in the project directly against their personal income, thus reducing their personal income tax.

There are also advantages for the communities in which these barns are located. In general, the project drives further economic activity. Some of this results from money spent directly in the community (Patience et al. 2002), such as the several well-paying

jobs typically created, while some is a product of the spin-offs that the project creates and any additional income generated for those who invested in the venture.

Quadra's community-based model brings together several important enterprise components: an established industry player with technical expertise; access to markets and credibility in the eyes of financiers; a tried-and-tested business plan; and an opportunity for local investment.

3.3.5 Heartland Pork Management Services

Late in 1996, Saskatchewan Wheat Pool (SWP) unveiled an ambitious quarter-billion-dollar hog initiative (Ewins 1996; SWP 1996). While the production model differed from Quadra's, the motivation to become involved in the industry, the opportunities for producers and local communities to invest in the enterprises, the limited-partnership structure, and the expected benefits to the parties involved were all similar to those of the Quadra model.

SWP's intention was to build a minimum of twenty-five large, multisite operations in Saskatchewan, producing about two million hogs per year (Saskatchewan Wheat Pool 1997). Each three-site, 2,400-sow project would consist of a 2,400-sow farrowing barn, an 8,800-pig weanling barn at a separate site within two miles of the sow barn, and a third site within two miles of the weanling barn containing two 8,000-head finishing barns. The projects were based on an "all-in, all-out" strategy designed to maximize herd health and production advantages. Each project was budgeted to cost between \$9.3 and \$12.0 million, produce 55,000 market hogs each year, employ fifteen to eighteen people,

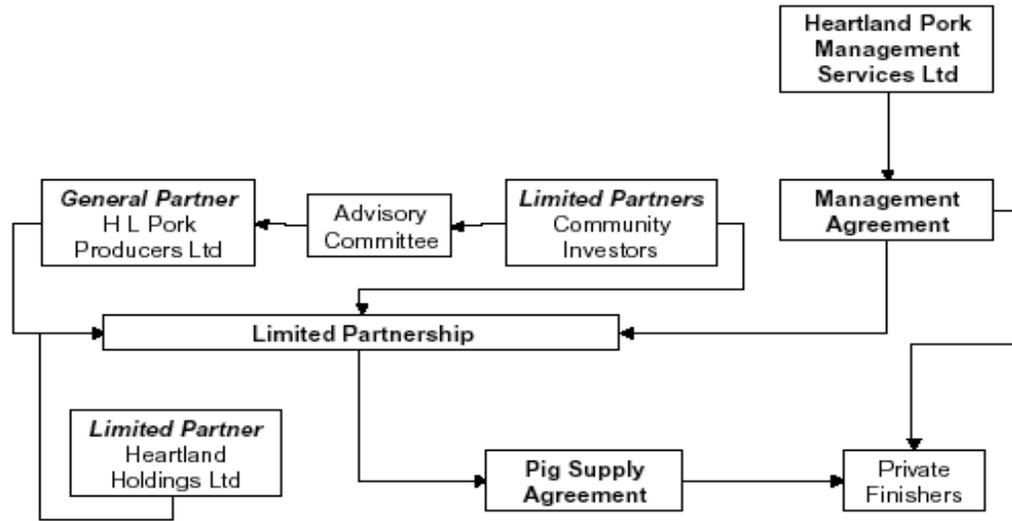
consume 14,000 tonnes of feed, and generate effluent that could fertilize 2,100 acres per year (Ketilson 2002).

SWP kicked off the initiative by issuing a press release inviting communities to partner in the development of these large projects. Within a few months, SWP had signed agreements with twenty-five Saskatchewan communities. Ketilson explains:

The communities' commitment in the Heartland Partnership Agreement was to raise 50% to 75% of the equity capital for the project, to have community support for the hog project, and to assist in the identification, selection and purchase of suitable land for the hog barn locations.... Heartland committed to provide 25% to 50% of the equity capital. Heartland and a local advisory group managed the development of the project. Heartland staff developed the prospectus for the share offering, assisted and trained local people to sell shares in the project, assisted in the selection of sites, prepared and shepherded permit applications for the hog sites, and provided support for community and neighbor communications and liaison (2002, 135).

While SWP examined several types of ownership structures for these projects, including New Generation Co-operatives, it finally settled on a limited partnership arrangement similar to that used by Quadra. Once again, the limited partnership model offered tax advantages to investors and was easily convertible to a corporate structure when it became advantageous to do so. The legal framework for the ownership of these projects is shown in figure 3.4.

Figure 3.4: Heartland Pork Management Limited Partnership Concept



Source: Ketilson 2002.

While communities were quick to express interest in these ventures, raising sufficient capital was a problem with all of Heartland’s projects. By 1999, only seven (see table 3.3) had been completed and further development was halted. Of the seven projects, only four proceeded according to the development plan, and even in those cases, the level of community-based investment just met minimal requirements.

Table 3.3: Heartland Pork Management Projects

Name	Location	Size of Operation
The Manitou Project	Neilburg	2,400 sows
Bear Hill Project	Perdue/Biggar	2,400 sows
Horizon Project	Dinsmore	2,400 sows
East Diefenbaker Project	Strongfield	2,400 sows
Carlton Trail Project	Cudworth	2,400 sows
Carrot River Valley Project	Carrot River	2,400 sows
Elm Springs Project	Elm Springs	1,200 sows

With the remaining three projects, rather than delay construction while waiting for investment to increase, SWP assumed full ownership. By 2001, when all seven were operating at full capacity, SWP marketed approximately 350,000 hogs (SWP 2001). The location of the seven Heartland barns is shown in figure 3.5.

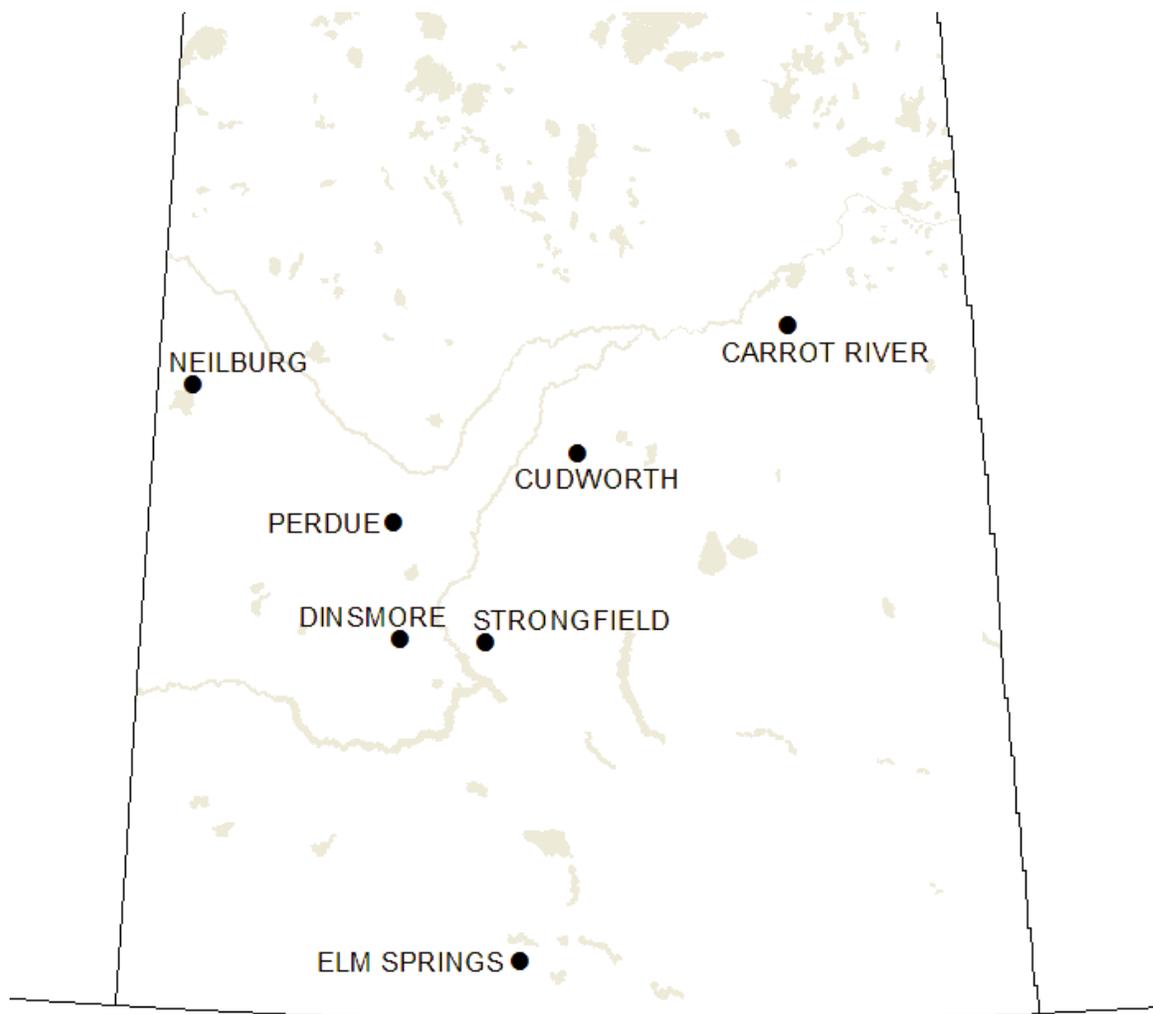


Figure 3.5: Heartland Livestock Management Hog Projects in Saskatchewan

3.4 New Generation Co-operatives

3.4.1 Introduction

The following case study of New Generation Co-operatives outlines the features of this organizational model, its origins, its development and evolution, the current extent of its application in the United States, and the migration of the model into Canada, and more specifically, Saskatchewan.

3.4.2 Organizational Form

New Generation Co-operative (NGC) is the name given to an emerging business form designed specifically to integrate farmers into the value-added processing of the bulk commodities they produce. In each case, the processed product is somehow transformed so that it becomes more valuable than the bulk commodity itself. NGCs bring producers together to collectively achieve an end that they could not reach individually. In this way, NGCs are similar to traditional co-operatives (Fulton 2001a; Stefanson, Fulton, and Harris 1995; Stefanson 1999). While these enterprises borrow many of the fundamental features of traditional co-operatives, NGCs also have some important distinguishing differences, including closed membership, large equity investment by members, and delivery contracts (Fulton 2001a).

In the basic NGC model, a small group of producers with a value-added processing idea band together and form a business entity in which membership is sold to a broader group of farmers who are able to produce the given commodity. Membership shares have voting privileges and are the basis on which a board of directors is elected and the organization controlled. As with traditional co-operatives, the one-member, one-vote principal applies.

The funds generated from the membership drive are used to develop a business case, hire a project manager, and to conduct organizational development. The group develops a complete plan for the construction of the facility that will process their commodity (Fulton 2001a; Stefanson, Fulton, and Harris 1995).

Decisions regarding location, capacity, and other details result from analysis of the business case. Once the facilities are designed and a full prospectus prepared, equity shares, which are tied directly to the delivery of the commodity being processed, are sold to producer members. The number of shares sold and their price are determined to coincide with the volume of the commodity required for the optimum efficiency of the processing facilities and the extent of the capital required. The sale of shares stops, therefore, when the predetermined volume has been achieved. NGCs are thus closed co-operatives, which is the first major distinction from many traditional co-operatives (Fulton 2001a).

The price at which equity shares are sold is set such that the funds generated by the sale of the predetermined number represents a significant portion of the capital cost of the project—usually 35–50 percent—and further represents a significant capital contribution by each member. This, again, is a departure from traditional co-operatives. Having such significant member equity makes accessing debt financing for the remaining capital requirements relatively easy, and ensures that profits realized from operations can be returned to the members rather than being used to service high debt (Fulton 2001a).

An important feature of the delivery shares is that they represent a contractual agreement between the members and the co-operative to both provide and purchase the commodity

in question. Detailed specifications regarding the quality of the commodity, the timing of its delivery, and the price paid for it, are all clearly outlined as part of the delivery contract. The price paid for the commodity is usually set at close to market value (Fulton 2001a; Stefanson, Fulton, and Harris 1995).

A third type of preferred share is sometimes made available to outside investors. These shares usually receive a fixed rate of return and carry limited voting privileges as established in the articles and by-laws of the NGC (Haaf and Stefanson 2001).

Producer/members involved in such value-added ventures stand to benefit in a variety of ways. First, in those cases where the venture draws raw product from a small geographic area, reduced shipping costs may be realized if the processing facilities are located in relatively close proximity to the producers. Second, producers are guaranteed a market for their commodity, at least to the extent of their delivery rights. Third, assuming profitable processing operations, producer shareholders reap dividends corresponding to the extent of their investment. Finally, equity shares are tradable, another distinctive characteristic of the NGC model, and therefore have value. Given board approval, producers no longer wanting to or able to produce the commodity can sell their shares to other producers. If the venture has proven viable, those shares may have appreciated, thus making their sale profitable (Egerstrom 2001). Finally, it has been argued, that use of the NGC model, at least in the United States, reduces transaction costs resulting from taxation and securities treatment (Fulton and Kennett 1999; Stefanson 1999).

3.4.3 Development Background

The New Generation Co-operative organizational form developed in the United States beginning in the early 1970s. NGC development in the US is impressive, particularly in the Upper Midwest. While a producer's decision to become involved in value-added processing is a response to the changes occurring in agriculture, the decision to choose the NGC organizational form is largely the product of determined development efforts and support. Development support is well documented and has taken a variety of forms. Stefanson (1999) has illustrated how a network of development assistance and support, including financing, co-operative development education, and business development, have all contributed to this success. Support for this approach has come from the existing co-operative sector, financial institutions, universities, and government, particularly the United States Department of Agriculture (USDA). Fulton and Kennett (1999) note that while this network of support was important, other factors, including a preponderance of traditional co-operatives in the area, the common ethnic background of the farmers involved, state governments that, regardless of political affiliation, were not hostile to co-operatives, and more importantly, favorable taxation regulations and exemption from antitrust legislation, all contributed to a preference for the selection of the co-operative organizational form.

The following sections of this case study are deliberately labeled to loosely correspond with the general adopter categories identified in the diffusion of innovation theory as outlined in chapter two.

3.4.4 The Innovators

One of the earliest NGC examples, and the one often credited with setting the stage for subsequent NGC development, is American Crystal Sugar Company (ACSC). Prior to its transformation to an NGC, ACSC was an investor-owned company with a long history of sugar production in the Red River Valley. By the early 1970s, however, it was looking to discontinue sugar-beet processing. With the majority of the sugar-beet processing market share in the Red River Valley, American Crystal's exit would have left little or no demand for the beets that were being produced.

The sugar-beet producers in the area decided to purchase the company themselves and structure it as a producer-owned processing co-operative. At the insistence of those financial institutions backing the venture (Fulton 2003), the organization was to follow a pattern used by California co-operatives, which spelled out producer delivery obligations and significant up-front equity investments by producer members (Patrie 1998b).

Approximately thirteen hundred producers were able to raise \$86 million and purchased the company in 1973.

The new company quickly upgraded its processing equipment and capacity and within four years had doubled the required acreage of beets (American Crystal Sugar Company 2002). The timing of the move to purchase the company was extremely fortuitous for the producers. Egerstrom (1994) notes that a global drought during the year that they purchased the company drove up the price of sugar from thirteen to seventy cents per pound and that this sudden windfall allowed many producers to pay off their investment in the co-op with their first crop.

Three other start-up sugar-beet processing co-operatives developed similarly structured ventures simultaneously—the Min-Dak Farmers Cooperative, founded in 1972 (Min-Dak Farmers Cooperative 2003), Southern Minnesota Sugar Beet Processors, also founded in 1972, and Red River Valley Cooperative, founded in 1973 (Sugarbeet Research and Education Board of Minnesota and North Dakota 2003). The Red River Cooperative merged with the American Crystal Sugar Company in 1975. American Crystal developed strong links with the other co-op processors and formed joint venture marketing organizations. In 1993, these groups formed the United Sugars Corporation, which by 1999 was the largest marketer of beet sugar in the United States, holding a commanding 25 percent share of the nation's entire sugar market (Karg 2001).

ACSC has been quite innovative. The company pays a premium for sugar content, for example, which encourages the production of high-sugar beet varieties rather than the larger beets with lower sugar content that had been previously grown. Over its thirty-year history as a co-operative, American Crystal Sugar Company shares have increased in value from around \$100 per acre of sugar beets grown to as much as \$2,300 per acre in 1994. While this has created value for the producers, it has made farm succession or new entry into the industry particularly expensive and difficult (Egerstrom 1994).

Another early and highly visible NGC start-up was Minnesota Corn Processors (MCP), formed in 1980. MCP used an organizational model similar to that of American Crystal Sugar to create a corn wet-milling plant that started production in 1983 at Marshall, Minnesota. In this case, approximately twelve hundred producers purchased shares to raise \$18 million of the \$50 million needed to build a plant to produce cornstarch and

corn syrup. MCP later expanded its membership to about fifty-four hundred and diversified its processing in 1988 to include ethanol production. In 2000, MCP converted to a limited liability corporation (LLC) (Clifton Gunderson LLP 2002). By 2002, with 6 percent of total production, MCP was the nation's second largest ethanol producer, but far behind Archer Daniels Midland Company (ADM), which had 41 percent of supply. During the late 1990s and until most recently, MCP faced threatening financial challenges, which nearly led to bankruptcy. This instability, combined with an aging membership looking for a means to recover some of its investment dollars, made MCP an attractive takeover target (Losure 2002). In September 2002, MCP was acquired by ADM (Minnesota Corn Processors 2003), thus solidifying ADM's position as the dominant ethanol producer in the United States.

3.4.5 The Majority

While the examples of NGCs described above were established and operational by the early 1980s, it was not until 1991 that the organizational form was replicated. Patrie (1998a) attributes this development lag to a few highly visible co-op failures, particularly in ethanol production, which caused producers to be reluctant to use the model. The next real push in NGC development came with efforts to create the Dakota Growers Pasta Company in Carrington, North Dakota, in 1991. A carefully thought through development process and organizational model resulted not only in a highly successful farmer-owned co-operative pasta plant, but also a renewed interest and confidence in the NGC model. Following on the heels of Dakota Growers Pasta was the North American Bison Cooperative, which built a \$1.6-million processing plant and office in New Rockford, North Dakota.

The successful start-up of Dakota Growers Pasta and the replication of the organizational model with North American Bison marked the beginnings of a phenomenon that became known as “Co-op Fever.” Co-op Fever is the name given to the wave of New Generation (or value-added) Co-operative development that occurred during the 1990s (Patrie 1998a). While this flurry of development began in North Dakota, it quickly spread to neighboring states, particularly Minnesota. Bill Patrie, a co-op development specialist at the center of this development push, summarizes Co-op Fever as the product of “a convergence of circumstances, personalities, economic conditions, political culture and government actions” (Patrie 1998a).

Looking more closely at the factors to which Patrie alludes reveals a number of institutions supportive of, and programs available to assist with, new co-operative development. Among these were the existing telephone and electrical co-operatives that made zero-interest loans available to rural enterprises, and financial institutions such as the Bank of North Dakota and the St. Paul Bank for Cooperatives, which administered programs designed to assist farmers to pursue value-added ventures using the co-operative organizational form. Within these organizations were leaders with valuable economic development experience prepared to champion co-operative development. Patrie (1998b) also points to a fledgling, but quickly developing, professional infrastructure able to provide legal, accounting, and business-development counsel. The same individuals and firms repeatedly became involved in, and in doing so developed expertise with, co-operative business start-ups. As Patrie (1998b, 7) explains, “the learning experience from the start-up of one co-operative is valuable in starting a second.”

Patrie (1998b) goes on to explain that these institutions and programs existed as part of an umbrella development plan for the State of North Dakota. This plan was the product of intensive research and strategizing by various groups and from various sectors of the economy. The plan resulted in legislation called “Growing North Dakota,” which dedicated \$22 million for economic development. This money, drawn from Bank of North Dakota profits, was used to create an equity capital corporation, to fund granting organizations, and to finance interest buy-down programs. However, as Patrie (1998b, 8) suggests, “the greatest contribution of this legislation to ‘Co-op Fever’ may have been the creation of expectancy—some projects on the drawing boards could now be moved forward.”

This sense of expectancy was fueled by extensive media coverage of Co-op Fever. Local and national media covered the story, which the Associated Press deemed to be one of the top ten stories of the year for 1993 (Patrie 1998b). What seemed to be a revival of North Dakota’s economy became the subject of agricultural publications, trade and industry journals, and even the popular press (Patrie 1998b). In addition to catching the attention and spurring the enthusiasm of American producers, Co-op Fever also drew international attention and resulted in delegations from several countries traveling to North Dakota and Minnesota to observe and try to understand this development phenomenon, with hopes of being able to replicate its success at home (Egerstrom 2001). In fact, requests for tours of Dakota Growers Pasta Cooperative were made so frequently that management was forced to stop granting permission (Patrie 2001).

Table 3.4 summarizes the various value-added New Generation Co-operatives in the United States as of 1999. There is a clear and significant increase in numbers from the four in operation in the 1980s to the eighty-nine identified in 1999. The organizations identified in table 3.4 are located in nineteen American states, but nearly two-thirds of them are in Minnesota (twenty-nine) or North Dakota (twenty-four). Nineteen, or

approximately 21 percent, of the NCGs are involved in ethanol production. In Minnesota, eleven of twenty-nine, or 38 percent of the ventures, are producing ethanol. Of these eleven, only one, Minnesota Corn Processors, produces more than fifteen million gallons of ethanol per year. The other ten processors are all at or below the fifteen-million-gallon level. This is noteworthy because the government strategy developed to encourage ethanol production in Minnesota stipulated that only the first fifteen million gallons of production would be eligible for a twenty-cent-per-gallon production subsidy (The Auditor of the Minnesota State Government 1997).

Table 3.4: New Generation Co-operatives in the United States (1999)

Agricultural Sector	Number of Co-operatives
Beans and Legume Processing	7
Corn Processing	19
Dairy Processing	1
Diversified Organic Production and Processing	4
Fiber Processing	6
Fish Production	3
Fruit Processing	4
Grain Processing and Marketing	6
Livestock Production, Processing, and Marketing	14
Poultry Production	6
Producer Alliances	3
Purchasing and Service	1
Soybean and Oilseed Processing	6
Sugar Beet Processing and Marketing	4
Vegetable Processing and Marketing	5
Total	89

Source: Merrett, Holmes, and Waner 1999.

While many NGCs were formed during the 1990s, the largest concentration of NGC development occurred around the small community of Renville, Minnesota. Renville is a town with a population of approximately thirteen hundred residents located about a hundred miles southwest of Minneapolis in a part of Minnesota reliant on agriculture. Renville, sometimes known as “The Cooperative Capital,” is home to nine co-operative businesses, five of which are structured as value-added NGCs. Renville’s five NGCs employ about five hundred people full-time, thus making a significant contribution to a level of economic prosperity uncharacteristic of many other similar communities (Cecil 2001; *Carbohydrate Economy* 1999).

Renville’s first NGC was actually not part of Co-op Fever, but was one of the early sugar-beet processing co-operatives described earlier. Southern Minnesota Beet Sugar Cooperative (SMBSC) was founded by 300 producers in 1972. SMBSC has since grown to 558 members; it processes an average of more than 9,000 tons of sugar beets daily; and employs approximately 300 year-round and 400 seasonal employees (Southern Minnesota Sugar Beet Cooperative 2003).

The first NGC to form in Renville in the 1990s wave of development was the ValAdCo swine production co-operative. Founded in 1991 by 39 corn producers, ValAdCo produces breeding stock (gilts) for resale to hog producers in the area and also finishes swine on ValAdCo’s own farms. The co-operative has since grown to 130 members; it employs 65 full-time and 12 part-time employees; and generates \$23 million in annual sales (City of Renville 2003).

Renville's next NGC was Golden Oval Eggs, founded in 1994. Members of the co-op are producers who provide the corn that is processed into chicken feed at United Mills, described below. The original venture included sixteen barns with a capacity of two million laying hens. The eggs were processed on-site into liquid egg products and sold to two companies that further processed and sold the products in the retail and food service industries. Golden Oval now has about seven hundred members and has expanded to include a large egg production and processing facility in Thompson, Iowa. With sales in 2001 exceeding \$35 million (Golden Oval Eggs 2003), Golden Oval is among the top thirty egg producers and top ten egg processing companies in North America. The co-operative's Renville operation employs eighty full-time workers and contributes approximately \$14 million annually to the local economy (Persson 1999).

Formed roughly simultaneously with Golden Oval, Renville's United Mills was incorporated in 1994. United Mills is a feed-milling co-operative that currently supplies feed for its members, which are other co-operatives, namely Golden Oval Eggs, ValAdCo, and Coop Country Farmers Cooperative, a local farm supply and marketing co-operative. United Mills has twelve employees and manufactures three hundred thousand tons of feed annually (Cecil 2001).

The most recent addition to Renville's list of value-added co-operatives is MinAqua Fisheries, which first started raising fish in 1998. MinAqua raises and markets tilapia, an African perch variety common to Egypt, but popular among North American Asian communities. Because tilapia live in warm water, raising them requires that water in the holding tanks be heated to about 85 degrees Fahrenheit. This is achieved cost effectively

by using heated waste water generated by Southern Minnesota Sugar Beet Cooperative. Three hundred and twenty producer-members provide soybeans that are used in the feed mix for the fish. After several years of contending with unsettled markets, MinAqua first generated a profit in 2002, and is expected to pay its first dividends to members in 2003. Selling about 150,000 pounds of live fish per month, MinAqua is now the second largest tilapia producer in North America. The co-operative employs ten full-time workers (Gunderson 2003).

The experience in Renville is clear evidence of the impact that value-added processing and marketing can have on an agricultural community. While the NGC model of organization offers the most direct benefits to the producers who own these ventures, many additional benefits accrue to the community in which the ventures are located and to those communities from which the members come. These benefits include enhanced local decision-making capacity, a renewed self-help attitude, and various economic multiplier effects such as an increased tax base, new business development, and increased retail sales (USDA 2000).

3.4.6 NGCs in Saskatchewan

While the model has migrated north, NGC development efforts in Canada have been less successful. Although most provinces now have enabling legislation, few of these organizations have developed. This is true even in Saskatchewan, where most of the Canadian research and development work for this model occurred. To date, only five NGCs have been registered in Saskatchewan, and of these, only a couple are operational.

Some development effort has occurred and minimal financial assistance has been available in Saskatchewan through the former Department of Economic and Co-operative Development and the Department of Agriculture. The established co-operative sector has been supportive in principle, but has not conducted any concerted development effort or offered any financial support. The Centre for the Study of Co-operatives at the University of Saskatchewan has actively researched the NGC organizational model and is primarily responsible for its introduction to Canada in the mid-1990s.

A recent NGC development pilot project, conducted by the Centre for the Study of Co-operatives and funded by the Government of Canada, revealed not only a shortage of development support, but also a need for better co-ordination of existing resources and more of a network model of development similar to that found in the US. The report from that project also concluded that adequate professional infrastructure (lawyers, accountants, and business consultants willing and able to work with the NGC model) was lacking (Centre for the Study of Co-operatives 2001).

3.4.7 The Current State

By 2003, the number of NGCs in the United States had increased to 244 (see table 3.5). The overall number has grown significantly and the rapidity of development experienced during the 1990s appears to have carried into the new century. While Minnesota and North Dakota still have the greatest concentrations of NGCs, with forty-three and thirty-three respectively, Iowa, with thirty-one NGCs, has experienced the most noticeable increase. Ethanol production still commands the greatest overall share of NGCs, with a total of seventy-two production ventures in various stages of development spread among the various states (Merrett et al. 2003).

Table 3.5: New Generation Co-operatives in the United States (2003) ¹

Agricultural Sector	Number of Co-operatives
Beans and Legume Processing	10
Biotechnology and Bio-Pharming	4
Corn Processing	72
Dairy Processing	5
Farmer owned restaurants	2
Fiber Processing	10
Fish Production	9
Forestry	3
Fruit Processing	4
Diversified Grain Processing and Marketing	13
Livestock Production, Processing, and Marketing	41
Poultry and Egg Production and Processing	10
Producer Alliances	8
Soybean and Oilseed Processing	20
Sugar Beet Processing and Marketing	10
Vegetable Processing and Marketing	9
Wheat Processing and Marketing	9
Total	244

Source: Merrett et al. 2003.

¹ Information from this table must be used with care as several of the organizations identified are registered as LLCs rather than NGCs. Further, many of these organizations are still in a development stage (total of 84), while others no longer exist because they went bankrupt, dissolved, were taken over, or converted to another business form (total of 19). The original source should be consulted for full information on the respective organizations.

A close look at the co-operatives developed in the United States, and to a limited extent the few that exist in Canada, reveals that the NGC organizational model is somewhat fluid and evolving. Early development efforts stressed the importance of having the producer-members assume a greater range of roles along the value chain. More recent efforts have shifted to a more specific or narrowly defined role for the producers. At least in part, this reflects a realization that producers cannot be experts in all the varied activities that might be required to fully integrate along the entire supply chain. Examples of these activities include research and development at the production level, production of the commodity, research and development at the processing level, product processing, and marketing. More recently, NGC development efforts have focused on specific elements of the value chain and relied more often on relationships with other parties to undertake the particular activities in which they have some expertise, capacity, or market segment (Patrie 2001).

A clear example of this type of evolved arrangement is found with Trilogy Ltd. in Manitoba (Centre for the Study of Co-operatives 2001). Trilogy is a new organization resulting from a strategic alliance among Michael Foods, a food processor from Minnesota with established market share, Canadian Inovatech, Canada's largest processor of egg products, and Manitoba Egg Producer's Co-operative, an NGC owned by Manitoba egg producers. Involvement in Trilogy enables the NGC to be engaged in value-added processing without having to develop the capacity to do so or the market segment that justifies such activity. The partnership allows the risk of this type of venture to be shared among the three stakeholders. The NGC enables producers to act collectively and seek partnerships with established industry players. Fulton (2001b) suggests that

evolution of the model is not surprising and that it reflects parties responding to particular circumstances and changing environments. In each case, the individuals are simply adopting modifications that yield the best results for their group.

3.5 Summary

The case studies presented above provide samples of the types of activities becoming more common in agriculture. Farmers are becoming involved in a broader range of the activities that form the agricultural value chain, beginning even before production with such things as farm inputs and genetic stock, and extending all the way to the consumer. While producers have discovered, or in some cases been presented with, a vast array of opportunities for such involvement, certain choices appear to have dominated the industry. The cases presented above are drawn from these preferred subgroups.

The next chapter attempts to develop some understanding of why these particular choices were made and further, why the ventures profiled were structured in their respective and reoccurring organizational forms. Diffusion of innovation and path dependency theory, as outlined in chapter two, is used to analyze the case studies, and in particular the clusters of activity and the replication of organizational form that they reflect.

CHAPTER FOUR: ANALYSIS

4.1 Introduction

This chapter analyzes the case studies provided in chapter three, using the theories of diffusion of innovation and path dependency. Diffusion of innovation theory helps to explain how certain ideas or technologies spread, and also how successful the diffusion of a particular innovation is, based on the innovation's characteristics or those of the environment of its potential adopters.

For the purpose of this particular examination, we gain an understanding of why a given organizational form might or might not work to accomplish the intent of a group of producers. What this theory fails to explain is why, given a range of options that might all work equally well, a particular choice is made, and why it tends to be used repeatedly in favor of the alternatives. Applying a path dependency lens to the examination helps to explain the latter question.

In order to apply these two theories, the particular elements of each are presented as headings, and each of the three cases examined. The summary of the chapter ties together the various observations and identifies any emergent themes.

4.2 Diffusion of Innovation

4.2.1 The Innovation

In the case of the producer-owned terminals, the innovation was the producer-owned and -controlled enterprise that this group would use to make changes to the grain-handling system. Many of the changes that resulted were innovations in and of themselves and are discussed more fully in a later section.

In the case of the community-based hog barns, the innovation was a mechanism to pool community investment, which allowed the project management groups (Quadra or SWP) to initiate more projects, thus reaping greater benefits resulting from economies of scale, and in turn generating greater returns to the respective organizations. These projects gave local investors the opportunity to become involved in adding value to locally grown grain while creating local jobs. Investors had a reasonable expectation of fair return on investments, at least in part because of the tax incentives resulting from the particular organizational model. In addition, local grain growers, by injecting the effluent from barns into their fields, were able to significantly reduce their input costs related to fertilizer.

In the case of New Generation Co-operatives, the innovation was again the organizational form that allowed farmers to pool capital in order to own processing facilities, thus better integrating their role in the larger food system. The new model combined features of traditional co-operatives such as one-member, one-vote with unique features such as delivery contracts and tradable shares.

4.2.1.1 Characteristics of the Innovation

This section will look at specific characteristics of the respective innovations according to the criteria outlined in chapter two.

4.2.1.1.1 Relative Advantage

Producer-owned inland terminals provided a relative advantage to the status quo in a number of ways. One of the greatest achievements, according to interview participants, was the creation of greater competition in the grain-handling system, and along with this, the choice it gave farmers as to where they could haul and sell their grain. While such benefits were immediate, producers that invested in the enterprise stood to make a return on their investment while affecting change to the larger grain-handling system.

As mentioned earlier, some of the changes that owning and controlling the terminal allowed were innovations in themselves and yielded direct benefits to the producers.

According to Driver (2001), the list of these innovations includes:

- paying premiums for higher protein content;
- testing for protein content at time of delivery;
- cleaning and drying grain to export standards at point of origin;
- custom grain drying;
- paying trucking incentives for farmers further afield;
- loading larger train units (up to one hundred cars);
- selling condominium grain storage units; and,
- assessing elevator tariffs on a net-weight basis.

Interview participants connected with the community-based hog barns, suggested that this model provided a means for the management groups and their partner communities

to achieve the economies of scale available through large-scale production. Further, the model was effective in pooling investment capital while securing community support for the projects. The evolving structure of the enterprises allowed for the exploitation of certain tax advantages, thus making the potential return on investment more likely. The projects accommodated a certain degree of local control and offered a local value-added use for the grain produced in the respective communities.

In the case of SWP, the benefits of community-based hog development might have been less evident to potential investors. While the model called for a high level of local ownership, it appears that it did not provide much in terms of local control.

The New Generation Co-operative model likewise provided considerable relative advantages. It allowed member-producers to pool capital in order to further integrate into the agri-food chain by becoming involved in processing. The delivery contract feature of the model removed some of the uncertainty related to price fluctuations that is typical of production agriculture. As Patrie (2001) suggests, the model also allowed farmers to remain in control of their investments while creating a new revenue stream from processing.

4.2.1.1.2 Compatibility

It appears that the producer-owned inland terminal model aligned relatively well with the needs, experiences, and values of the groups considering these ventures. While many of the individuals involved would likely have been familiar with producer-ownership through their experiences with co-operatives, these organizations were no longer effec-

tively serving their needs, particularly their need for change. The failures to meet the changing needs of producers are well documented in what has become known as property rights issues (Cook 1995; Cook and Iliopoulos 1998). It appears that the new producer-owned terminals addressed these issues using a corporate structure that was common to many farmers who had already incorporated their farming operations or had invested in other ventures with similar structures.

Likewise, at an operational level, many of the physical components of these ventures were, if not familiar, at least not foreign to producers who had always hauled their grain to handling facilities. This model struck that delicate balance between being compatible yet being different enough to still be viewed as innovative. Part of what these farmers wanted was a change from the existing grain-handling and -marketing systems, and the producer-owned inland terminals provided the means for such change.

Interview participants indicated that community-based hog barns, at least along the Quadra model, were similarly compatible to the groups considering these ventures. Producers were inundated with messages that they needed to diversify, and this model provided a tidy mechanism for that to happen. Involvement in these enterprises allowed farmers to engage in the hog industry without ever having to handle a hog. While the Quadra model may have been compatible enough to attract community investment, the absence of local control characteristic of the SWP hog initiative may help to explain the reluctance of many potential investors in that initiative.

In the earliest sugar processing NGCs in the US, the producers were already familiar with contracted growing, which is similar to the delivery obligations inherent in the

NGC model. These same producers also had a long history of involvement with traditional co-operatives, and the one-member, one-vote concept was therefore not only compatible, but in some cases, preferred, because they were fairly homogeneous groups. As well, many of the farmers becoming involved with NGCs were already investing in processing and marketing ventures, albeit not co-operatives, and were therefore accustomed to this type of risk.

Some interview participants suggested that the reluctance to invest in NGCs in Canada had to do with the word “co-operative” forming part of the name. Producers wanting to become involved in something new were dissuaded by an impression that these new ventures would be too similar to traditional co-operatives. In addition, some observers suggest that Saskatchewan farmers, to a large extent, still function within a production mentality, not wanting to engage in value-added activity (Fairbairn 2003). This reluctance was compounded by the absence of the professional infrastructure required to move such projects forward. To retain a lawyer or hire an accountant to work on an NGC venture required a period of learning for the professionals involved. The cost of such learning would of course have been borne by the farmers. Put simply, it was easier and cheaper to structure an organization as a corporation or limited partnership because the models were so widely used.

4.2.1.1.3 Complexity

The first attempt at a producer-owned terminal, by the group from Weyburn, was a bit of a stretch. Judging from Driver’s (2001) history of WIT, the group struggled with many issues, particularly in relation to the financing and operations of the venture. However,

one interview participant indicated that by the time the other groups were coming on stream, producers were quite familiar with these types of ventures (inland terminals) and these types of investments (community based). Many producers were already involved in hog barns, other terminals, canola-crushing plants, or pelleting plants. This other involvement made the inland-terminal projects far less complex for many investors. While the corporate model used was not particularly complex, neither were the particular innovative practices, such as protein testing or grain cleaning.

In the case of community-based hog barns, the overall model might have been complex, but according to interview participants, Quadra became very skilled at presenting the model in a fairly simple fashion that was readily understandable. Quadra was able to clearly illustrate how the various stakeholders fit into the larger picture and also why certain standard tools, such as legal agreements, were used at certain times. Quadra therefore focused on relationship building with the communities in which they pursued ventures. Quadra's presentations were well planned, breaking down the various components of the model and likely demystifying the larger whole. The conversion to a corporate structure following the limited partnership phase was clearly planned and therefore fully expected. It is likely that this planned process went a long way towards simplifying the otherwise complex evolution of the model.

Likewise, SWP had their field staff and delegates meeting with their farmer members and had many interested communities in place by the time they were ready to move with the project. Presentation of a clear and consistent model, likely helped SWP garner initial interest in the concept.

While the earliest attempts at NGCs in the US may have proven somewhat complex, those producer groups had little option but to move along with the model prescribed by the banks. Before long, what might at first have seemed complex would quickly have become commonplace. The model was well explained and a straightforward way for producers to put into practice the advice they were receiving to vertically integrate within the food system (Patrie 2001).

4.2.1.1.4 Trialability

As noted in chapter two, trialability is of particular importance to the earliest group of adopters, and one way to make an innovation more trialable is to introduce it in some modular form in which parts can be tried and in turn serve as demonstrations (Rogers 1995).

With the producer-owned terminals, there was not really much chance for this type of trial. The exception may have been with regard to the level of investment. Farmers could have invested enough to make the development of the enterprise proceed, but hold off investing huge sums for some later expansion. Likewise, at least with WIT, functions such as condominium storage, which came later, may have proven so popular because farmers were able to think of the earlier “terminal” as the trial.

The opportunity for trial with community-based hog barns was again minimal. There simply was not much chance to test the waters with these investments. Once the investor put money into the venture, it was largely there to stay, with little chance of getting it back if the venture failed. The exception is in those cases where Quadra was doubling the

barns from the original six-hundred-sow to twelve-hundred-sow barns. In those instances, producers would have judged whether or not to invest further based on their experience with the original venture.

With SWP, once again it was difficult to test the model without becoming fully engaged. Communities' reluctance to invest may reflect their realization that SWP was prepared to undertake these ventures whether or not the communities decided to partner. Indeed, letting SWP assume all risk on some of the barns may have served as a test of sorts. If those enterprises succeeded, then communities might be willing to invest based on those earlier experiences. Because the SWP plan was to build a full network of barns very quickly, sufficient time had not passed for potential community investors to gauge the level of success of the earlier ventures.

While trialability may not have been a feature of the very earliest NGCs in the US, farmers often invested in more than one of these ventures as the model spread (Patrie 1998b). The success or failure in a first venture may therefore have served as a trial on which to base a decision to invest in subsequent NGCs. Although sufficient development has not happened in Canada for this same phenomena to occur, at least one investor in Saskatchewan's best example of an NGC has indicated that "he would get in line to have the opportunity to invest in the next similar type of venture."

4.2.1.1.5 Observability

Driver (2001) documents how, in the case of WIT, the terminals that were being built in the US served as models for what was ultimately built at Weyburn. The producers had an

idea of what types of changes they wanted to see happen in the grain handling industry and the producer-owned terminal was the vehicle for such change. According to interview participants, every subsequent terminal built in Saskatchewan looked to WIT as the model. As more were built, they in turn served as models. The individuals involved in the earlier ventures were pulled into later projects to help guide the process and to serve as conduits for information about earlier terminals. One interview participant indicated that what subsequent groups saw when they looked to these models was a reasonable return on investment and the types of changes to the grain-handling industry that they had been pushing for.

In the case of community-based hog barns, large-scale hog production was already developing in most other grain-producing provinces in Canada (Whittington et al. 1996). Saskatchewan grain producers, suddenly facing increased grain transportation costs, knew they needed to add value to their grain closer to the point of production. This set the stage for development.

As Quadra developed its network of barns, it continually had the previous ventures to hold up as the model of success. On the other hand, SWP entered this industry with visions of a quarter-billion-dollar project. Rather than promoting this initiative as a series of developments, SWP presented a megaproject of a scale that community members could not compare or likely comprehend. This type of initiative was likely quite foreign to even the most ambitious agricultural entrepreneurs.

The American producers had a variety of large and small NGCs to observe and successes to witness. Many of these early ventures were providing positive rates of return and

offered a tempting example for subsequent groups. Producers witnessed American Crystal Sugar virtually save an industry that was about to dissolve. As Co-op Fever gained momentum, producers further afield likely saw NGCs behind the revitalization of formerly depressed and declining rural areas.

In Canada, unfortunately, there were not the same types of successes to observe within the country's borders. Some interview participants indicated that while the American examples were there to see, there remained a certain perception that "that is there, and this is here." In other words, there was some level of belief that circumstances were sufficiently different between the two countries that what was possible in the US was not possible in Canada.

4.2.2 Communication Channels

As explained in chapter two, communication channels are those elements of diffusion of innovation theory that consider the means of distribution of information about the innovation to and throughout the social group targeted for adoption.

As Driver (2001) indicates, in the case of Weyburn Inland Terminal, the efforts of the producer group received a tremendous amount of media coverage, partially because of the close links with the Palliser Wheat Growers Association, and partially because of the groups that were lending support to the idea, including C.P. Rail, Winnipeg *Free Press*, and the United Grain Growers. Equally important in garnering attention was the involvement of those groups opposed to the idea, which included the New Democratic Party, the National Farmers Union, the United Church of Canada, the Catholic Church, Saskatchewan Wheat Pool, and the Government of Saskatchewan. This level of public

press coverage was effective in creating a broad awareness of the idea. In order to convince individual farmers to support it, a committed group of organizers spent many hours in meetings in many communities trying to sell people on the idea.

Later ventures depended more on face-to-face interactions with those people involved in the earlier terminals. By the time that the second terminal was built, the question asked of those involved with WIT were not speculative in nature. Rather, interested groups could ask direct questions about earlier experiences and learn from them. Organizers from these ventures repeatedly refer to the networks of contacts that were used to spread information and to garner interest in investment.

With community-based hog barns, the Quadra network of barns grew based on the success of the predecessors. Potential community investors were able to see the success of other communities and then approach Quadra to come and speak to them. Quadra representatives spoke clearly about the importance of building a relationship with the members of the communities expressing interest.

In contrast, SWP started out with a broad-based communications strategy. Public documents announced the mega hog initiative and then the organization used a deep network of elected farmer delegates and field staff who worked closely with farmer members to introduce the opportunity to local communities. Interview participants explained how these people, particularly the delegates, were rooted in their communities and were seen as local leaders who could be trusted. Using this system of delegates and staff, SWP was able to effectively create awareness of and drum up interest in the

projects very quickly. Within a couple of months of the initial announcement, twenty-nine communities had come forward with expressions of interest. While the idea was well received, this grand scheme may have exceeded the comprehension of individual producers/investors. The initial warm reception of the idea reflects a level of trust in the individuals responsible for introducing it. When the actual development efforts began, potential investors were suddenly dealing with a large organization rather than the individual whom they originally trusted. Also, the initiative called for quick implementation, which likely did not allow sufficient time for some barns to be built and observed in operation before other communities of investors had to make decisions about subsequent projects.

The NGC development experience in the US clearly demonstrates the importance of communication channels to the diffusion process. At the height of the flurry of development referred to as Co-op Fever, the publicity was extensive. As noted by Patrie (1998b), Associated Press considered this phenomenon one of the top ten news stories of the year. Patrie also explains how Co-op Fever was at the center of many meetings, strategies, policies, and presentations regarding the revitalization of rural America. In part because of a positive feedback loop, the activity attracted attention and received heightened press coverage, which in turn spurred further development, and so on. Valente's (1994) notion of a self-sustaining system is evident at that point in NGC development in the Upper Midwest states.

In Canada, the communications were limited to certain co-operative sector and some academic channels. While a few producers, development agents, and academics traveled

south to observe the American NGCs in action, exposure was still relatively limited, and awareness of or confidence with the model minimal. The invisible barrier at the 49th parallel appears to have effectively held back meaningful communications with Canadian producers.

4.2.3 Time

4.2.3.1 Adopter Categories

Without a more intensive or deliberate collection of data related to specific dates of incorporation of the ventures, precise categorization of the players involved in the profiled ventures is difficult. Only where possible, therefore, and in broad generalized fashion, are categories assigned.

There were enterprises that could clearly be assigned the “innovator” label in the case of both the producer-owned inland terminals and the American New Generation Co-operatives. These were Weyburn Inland Terminal and American Crystal Sugar respectively. These ventures clearly came far before any successors and set the stage for later use of the organizational forms. Interview participants representing the subsequent adopters of the respective models consistently reported referring to these organizations in their own developmental exercise. Consistent with the theory outlined in chapter two, these innovators were arguably less adverse to risk, and perhaps even at the edge of their respective social groups, thus freeing them to undertake new ventures that challenged the status quo.

4.2.3.2 The Innovation Decision Process

With most of the cases, the decision to undertake the respective venture was a process rather than a one-time event. The groups of producers involved inevitably met repeatedly to discuss the undertaking, sometimes as a group of potential investors, as was the case with WIT and with many of the NGCs, and sometimes with some project proponent as was the case with Quadra, SWP, or even some of the Inland terminal groups in instances where they worked with grain-industry partners.

While project management groups such as Quadra placed great emphasis on building a relationship with potential community investors and ensuring that the model was clearly understood before moving forward, one interview respondent reflected on how SWP announced their megaproject, invited groups to express interest, and quickly proceeded with a plan to complete at least five large projects per year. When garnering sufficient community interest became problematic, SWP, rather than delaying the projects, opted to commit to assuming full ownership of the projects, effectively cutting the host communities out of the process. This type of approach likely forced potential investors to make an either/or decision and left little if any room for a decision process.

4.2.3.3 Rate of Adoption

As suggested in chapter two, the rate at which an innovation is adopted is often influenced by characteristics of the innovation. In the case of the inland terminals, sufficient time had to pass in order for WIT to prove its viability before subsequent groups followed in their own development, thus offering some degree of trialability.

A review of figure 4.1 suggests that once these successive groups were satisfied with a tested model, they adopted that model at a much faster rate.

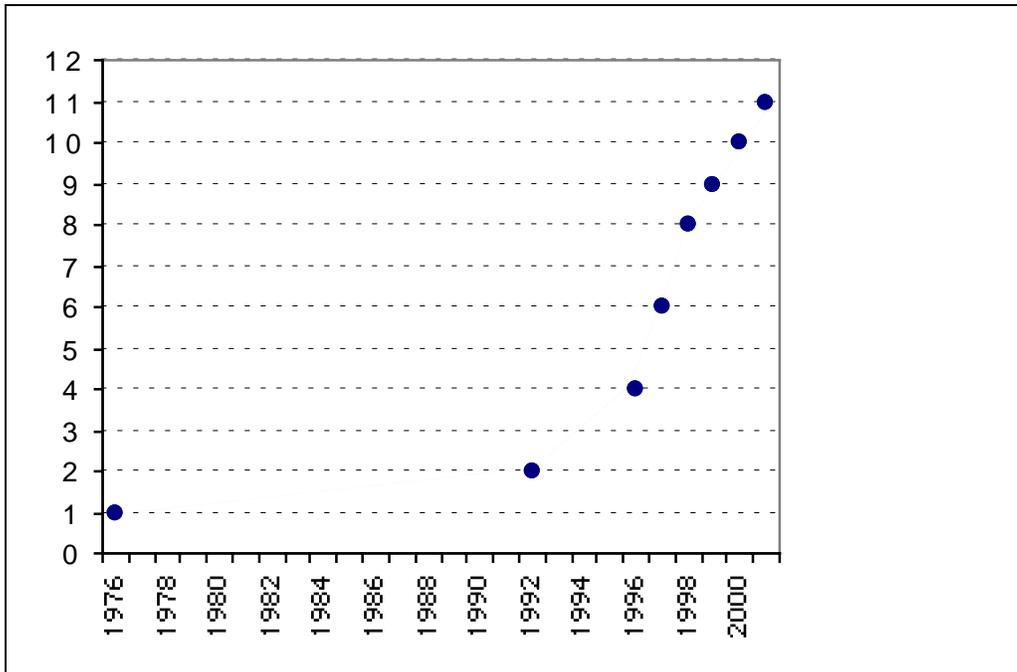


Figure 4.1: Number of Producer-Owned Inland Terminals in Saskatchewan

Likewise, the point at which the rate of adoption of the NGC model increased most dramatically was during the time when the model was receiving much public attention, which made it highly visible and easily observable (see figure 4.2). This degree of observability has yet to develop in Canada and may help to explain the slow uptake of the model in this country.

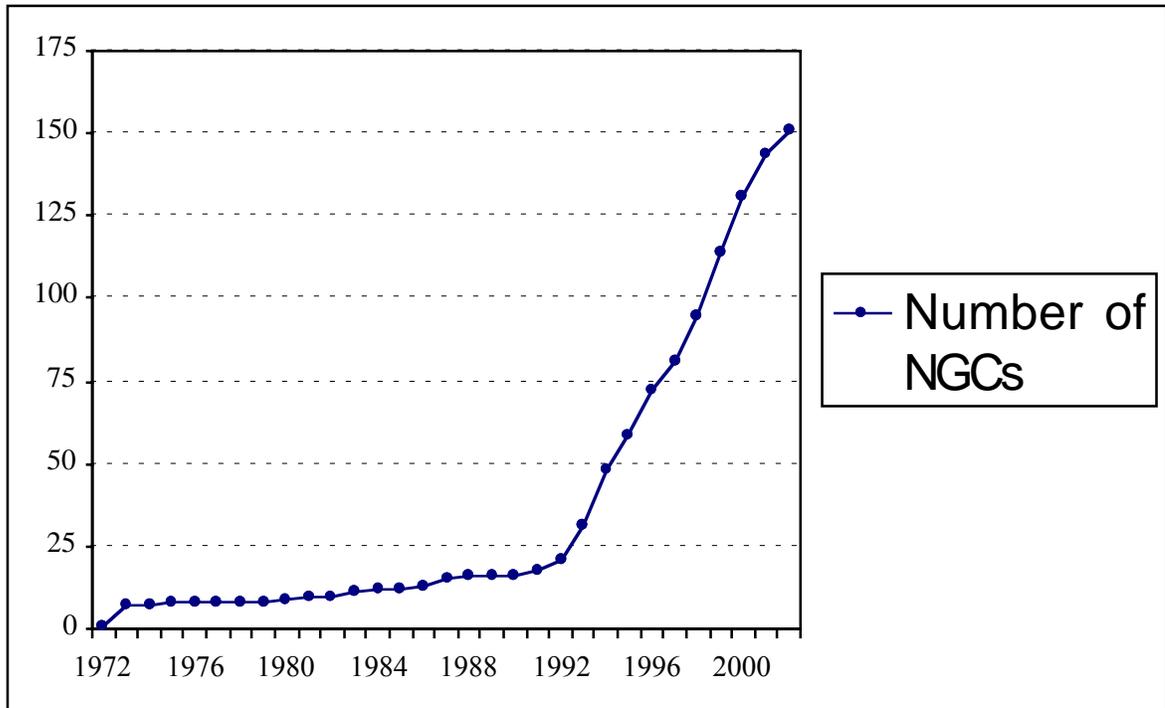


Figure 4.2: Number of NGCs in the United States.¹

The approach undertaken by Quadra, which involved host communities approaching the management group with an expression of interest, is arguably slower, yet results in a more predictable and constant growth in the use of the community-based model. Comparing Quadra’s experience with the initiative planned by SWP (see figure 4.3) reveals a dramatic difference in how these projects unfolded. The steep SWP curve indicates rapid change over a brief period of time.

¹ The data presented in this chart is drawn from Merrett et al. 2003. The number of NGCs includes LLCs, which have similar characteristics to NGCs. Further, these numbers represent only those enterprises that are operational, or that were at some point operational, even though they might now be defunct or converted to another form.

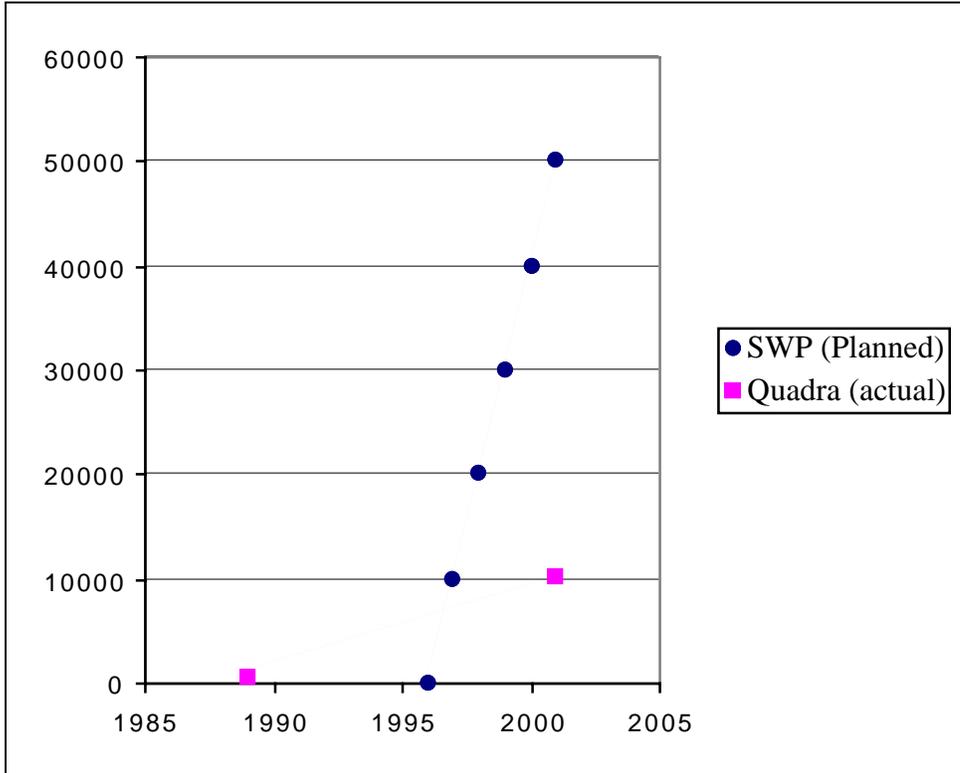


Figure 4.3: Community-Based Hog Production: Number of Sow Spaces²

It is important to note that the logistic curves presented in figures 4.1 and 4.2 are consistent with those drawn to represent the diffusion of other innovations. In each case, the characteristic S-shaped curve reflects a slow start followed by rapid increase in the rate of adoption, which in turn levels out, or plateaus. Given that this research is, in part, about testing the applicability of diffusion of innovation theory with organizational form, this observation is important in validating this approach.

² For the sake of comparability, the ventures have been represented according to the number of sow spaces created.

4.2.4 Social System

4.2.4.1 Social Structure

The common thread through each of these cases is that of producers who have recognized the changes occurring in agriculture, as outlined in chapter one, and who are willing to respond to these changes. In some cases, the groups have taken a very proactive stance, while in others, the new activity may well be a last-ditch effort to salvage a rural lifestyle.

The social structure in the case of producer-owned inland terminals consisted of those groups of grain producers that were dissatisfied with the existing grain-handling system and who felt that farmers should have greater control over the handling of their grain, and by doing so would provide themselves increased benefits. Records show that these groups were often linked together by pre-existing commonalities, including a strong opposition to the Canadian Wheat Board, which often manifested itself through membership in the Western Canadian Wheat Growers Association.

In the case of community-based hog barns, the social system into which the idea was introduced included a broader array of individuals. According to interview participants this consisted of producers who were interested in investment opportunities beyond their own farms, producers who hoped to market their feed grains to the venture in their own community, farmers who hoped to benefit from the savings realized by spreading effluent on their land, and other community residents looking for investment opportunities, especially investments that might also benefit the larger community.

In the case of New Generation Co-operatives, the social group was again limited to those individuals who produced the commodity in question. While some provision was

occasionally made to accommodate other community investors, the fate of the venture depended entirely on sufficient interest from this first group. Narrowing the group further, we can say that among this particular commodity group we are looking specifically at those who are interested in doing more than just producing the commodity—i.e., at those who are looking at ways to further add value to it.

4.2.4.2 System Norms

As explained in chapter two, system norms define the range of acceptable behavior within a social group.

In the case of the producer-owned inland terminals, the group pushing for WIT was arguably at the edge of the social group. Opposition to centralized marketing and to co-operative organizations was not the norm. At the time that the WIT was organizing, support for Saskatchewan Wheat Pool was high among producers, with the group opposed to it definitely the minority. Likewise, support for the Canadian Wheat Board was generally high, with exceptions as illustrated by members of the Palliser Wheat Growers Association. One interview participant indicated that by the time the subsequent ventures were undertaken, support for SWP had begun to weaken, thus making it easier to undertake initiatives that would directly compete with the organization. Any diminished level of support was likely a result of that organization's failure to provide its members with the types of benefits that producers were seeking. With the traditional system norm of supporting SWP deteriorating, the search for alternatives became more likely.

With the community-based hog barns, involvement in these types of ventures, while not necessarily in conflict with system norms, probably stretched them and were reflective of a slower evolution of the norms. Agricultural production has evolved from small mixed farms to larger, more specialized operations, and most recently to integrated arrangements in which producers, while still likely specialized in the production aspect, have become more involved in related activities within the agri-food system.

Opportunities to invest in community-based hog barns, at least under the Quadra model, provided the means for many producers to make a foray into the more integrated system. Likewise, other community investors, recognizing rural decline and interested in supporting a means to reverse it, were also likely prepared to re-examine system norms that might otherwise have discouraged such action and support these types of ventures.

It might be argued that SWP's approach in its community-based hog initiative was a clearer challenge to system norms. While SWP was historically a vehicle that members, and for that matter much of rural Saskatchewan, used to achieve various types of advancement, it was now dictating organizational strategy with members and other rural players as the mechanism to achieve its goals. This was a clear reversal of those respective roles and may help to explain why SWP was unable to implement its hog strategy as originally envisioned.

In the NGC case, at least in the United States, use of the organizational form merged relatively seamlessly with the experience of producers. In the earliest ventures, the sugar-beet growers were already familiar with and employing features of the model, albeit not under an NGC banner. Specifically, these producers were part of a regimented production

system, already growing specified varieties and contracting forward for particular volumes of beets. Many of these producers were also members of traditional agricultural co-operatives, thus making the notion of one-member, one-vote palatable (Fulton and Kennett 1999). The part of the new arrangement that might have required the greatest change in thinking was the notion of producer as processor. Given the absence of alternative options, however, producers were likely willing to assume that role rather than watch the demand for their product disappear. Many of the subsequent NGC ventures involved some of the producers involved in the earliest NGC incarnations, and for those producers at least, further use of the model would have presented little or no challenge to system norms.

In Canada, this scenario has not presented itself, and use of the NGC model has thus been much slower coming. In Saskatchewan, however, the most visible example of an operational NGC does share some common features with the earliest American enterprise. As one interview participant explained, Leroy AgriPork Co-operative came to be as a result of a forced situation with a limited window of opportunity, and local producers who wanted to be part of it needed to act quickly. Leaders of this group, having previous success using the local co-operative for innovative activities, were determined to use a co-operative model to manifest producer involvement in the new venture as well.

Given the extensive attention this project has received in the last couple of years, it may well be the Canadian counterpart to the earliest stage-setting American NGC ventures. While it undoubtedly challenges some system norms, the immediacy of the opportunity may have provided the impetus to overcome these issues. Whether this lone example will

offer sufficient social norm redefinition to allow expanded use of the model remains to be seen. What was clearly articulated by one of this venture's leaders was that, at least for that group, subsequent similar opportunities would be quickly embraced. To put it in the words of that individual, "Farmers will be lining up to invest in the next one of these."

4.2.4.3 Opinion Leaders and Change Agents

In each of the cases examined, opinion leaders and changes agents played important roles, albeit in varying ways and representing different interests. As outlined in chapter two, opinion leaders are members of the social group, while change agents usually work on behalf of some external agency.

In the case of the producer-owned inland terminals, it was clearly opinion leaders who were most strongly influencing the promotion of these ventures. As Driver (2001) outlines, in the specific instance of WIT, individuals who also happened to be members and officials of the Palliser Wheat Growers Association were not only credited with the initial idea to build a terminal, but were also responsible for creating awareness of the idea and stirring up interest in the venture. They established many of the important contacts that would help to move the project forward, developed the model that would be used, invested heavily in the project, and even helped secure the investment of other producers in the project. These particular individuals were outspoken, dedicated, and relentless in their pursuit of change.

While part of the social group, as innovators they were close to the edge of it, and at the time likely held ideas and opinions not fully in concert with the group that ultimately

supported the venture. They might best be described as “extremists” in their determination to change and their dissatisfaction with the status quo. Interview participants indicated that these people were regularly consulted, and that they also influenced the development of subsequent terminal projects. These projects also had their own leaders, but they were more squarely part of their respective social groups.

The change agents were less visible, yet important, in the WIT example. Driver (2001) outlines how these individuals, originally with the federal government and later involved with the construction of the terminal, had a vision of a network of terminals with WIT being the prototype. These agents were able to advance the project by exerting their influence, which varied from helping to secure early financing to establishing important and even more influential contacts.

In each of the examples of the community-based hog initiatives, the projects depended on both opinion leaders and change agents, with the latter representing the project-management groups in these instances. In the Quadra case, the agent was the president and principal of the management group. He was largely responsible for developing the community-based model and was the point person for each of the subsequent projects. It was this individual who established the relationships with the community groups, and in turn, worked with the leaders of the community proponent groups to ensure that the model was clearly understood by all stakeholders.

One interview participant explained how the local leaders were largely responsible for bringing forward the expression of interest in the projects, initiating project planning with the management group, and then, in addition to being primary investors in the ventures,

also took responsibility for securing additional investment from other community members.

Another interview participant explained that in the case of SWP, the initial change agents were employees, primarily district representatives and elected farmer delegates, who spread the word about the initiative to members in various communities once the initial hog strategy had been announced. Interested groups requested more information and were given presentations by a SWP employee who worked closely with producer members of the organization. This individual, also a district representative, had a close relationship with members and apparently held their trust. He identified potential interested communities and then explained the model to them, with the purpose of getting signed expressions of interest from local groups. This initial exercise was extremely successful, with twenty-nine communities coming forward. It is likely that the communities that came forward did so largely based on the trust of the individuals (delegates or district representatives) who originally introduced the idea. While interest was sparked by these individuals, further advancement of the opportunity was left with a local leadership group. It is not clear whether strong local leadership emerged in these projects.

Both change agents and opinion leaders played important roles in the spread of the NGC organizational model. Members of the early ventures regularly spoke with groups of producers interested in subsequent initiatives. These opinion leaders were able to illustrate their own experience and suggest how others might achieve similar benefits from their own ventures. While these leaders helped to create awareness and to instill confidence in the model amongst their peers, the role that change agents played is central

to the story of Co-op Fever. An important part of what Bill Patrie refers to as “the convergence of circumstances” involves the individuals, himself included, who worked on behalf of agencies determined to revitalize the rural economy of the Upper Midwest states. These agencies included universities, governments of various levels, financial institutions, co-operative development agencies, and existing co-operative organizations. These change agents brought the technical expertise that blended nicely with the personal experience of the opinion leaders to advance the use of the NGC model.

So far, the Canadian NGC experience has been lacking the vital opinion leaders willing and able to promote the model. Most promotional effort has come from change agents representing government and universities. While supportive in principle, existing co-operatives have done little to advance the model (Centre for the Study of Co-operatives 2001). With a few solid ventures finally operational, this scenario may change. The leaders from those examples now have the experience to speak with confidence about the relative success of their own enterprises. This component, combined with continued efforts by change agents, may lead to heightened interest in this organizational form.

4.2.4.4 Types of Innovation Decisions

How the decision to innovate is made, and who is making that decision, has an important effect on the outcome of a diffusion experience.

In the case of the producer-owned inland terminals, the decisions to undertake these ventures were in the hands of individual investors. While there was often intense pressure from the opinion leaders, the decision was ultimately made by producers deciding if they

wanted to build and own these enterprises as alternatives to the existing grain-handling options. How these organizations would be structured, however, or the particular organizational form that would be used, was not always the decision of the overall group. Driver (2001) outlines how, at least in the case of WIT, a decision not to take a co-operative form was made by an interim board of directors determined to distance itself from the co-operative-dominated status quo, even though a feasibility study recommended that there were advantages to choosing a co-operative structure. Interview participants indicated that this early decision influenced each subsequent inland terminal project as organizers regularly looked to WIT for guidance and as a model to follow.

The experience with the community-based hog barns was similar. While the decision to invest in the barns was ultimately the choice of individual investors, the models were predetermined by Quadra and SWP.

Investors in the earliest example of an American New Generation Co-operative had less of a real choice in the matter. While individuals could have opted not to invest, it would ultimately have meant the disappearance of a market for the beets they grew. The sugar-beet producers determined that they wanted to own the processing facilities and made the decision to pursue that initiative, but as Fulton (2003) indicates, the financial institutions backing the venture imposed the particular organizational form that ultimately became known as the New Generation Co-operative. That decision likely flavored each subsequent foray by producers into the processing component of the agri-food chain.

4.2.4.5 Consequences of Innovations

It is common for the adoption of innovations to yield certain consequences. These consequences can be unexpected or undesirable, and may be indirect secondary outcomes of the original innovation. Examining these consequences is helpful in fully understanding the diffusion process.

In the case of the producer-owned inland terminals, the development of these enterprises has paralleled the strategies of the larger grain-handling system. Specifically, the dominant grain-handling companies have consolidated their systems and built large inland terminals similar to the producer-owned versions. Ironically, there now exists an overcapacity of these facilities on the prairies, and those owned by producers have contributed to this surplus (Schroeder et al. 2001). While this might result in an especially competitive environment that might benefit the producers, it is questionable whether these independent ventures will be able to survive in competition with the larger companies.

One outcome sought by early adopters was a more competitive grain-handling system, and one of the ways that this competition has been manifested is in the tendering of grain transportation by the Canadian Wheat Board. The Canadian government currently requires that the Wheat Board tender 50 percent of its sales. Ironically, the Inland Terminal Association of Canada has requested that this practice cease because the producer-owned terminals cannot compete with the large grain-handling companies such as Saskatchewan Wheat Pool and Agricore United, which are in turn calling for 100 percent tendering (Ewins 2003). Being awarded the tenders means that those companies can move grain and free up space for producers to haul grain to their facilities. If the

independent terminals cannot ship grain, then producers have no choice but to haul grain to the larger companies. While this might mean less choice for farmers, this stiff competition should ultimately benefit producers, as any savings are eventually passed on to them through their Canadian Wheat Board pool accounts.

With the community-based hog barns, the results were largely as expected, with the exception of the SWP effort, where the plan called for a vast network of hog barns largely owned by community investors and feeding into an integrated processing and marketing system. Instead, the result was a scaled-down version with much less community investment. As discussed earlier, this lack of community investment prompted SWP to take on a larger-than-planned ownership position in some barns and full ownership in others.

Some unexpected consequences have resulted from the use of the NGC model. Development of some of the ethanol-production co-operatives, particularly in Minnesota, has been the subject of some controversy. Holland (2003) argues that the decision to structure them as NGCs meant that the business case was relaxed and that producers were willing to invest, even though the viability was marginal at best. He goes on to suggest that, particularly with the discontinuation of government ethanol-production subsidies, these entities will become attractive takeover targets for industry giants like Archer Daniels Midland. It is unlikely that producers' decisions to invest in these ventures were based on such an expectation.

Another unexpected development was the decision by some NGCs to convert to corporations after years of successful operation. These changes have been instigated by a slow

shift of ownership from producers as owners to former producers as owners. In these circumstances, the original investors who supported the venture are either not able to or not interested in continuing to produce the commodity in question. Rather than sell their delivery shares to other producers, they have held on to them and acted as speculators. Patrie (2001) explains that when faced with decisions regarding the conversion of the company into a corporation, the choices were made as investors rather than as producers. While part of the motivation for creating these ventures was to put money into the hands of producers—and conversion to a corporation often promises that—another part of the original motive was to make production of the particular commodity viable. This latter motive likely weakens with the conversion.

4.3 Path Dependency

As outlined in chapter two, path dependency theory suggests that in some circumstances, early choices that are made, even if they are suboptimal, gain increasing advantage.

These gains, particularly economies of scale, are a product of positive feedback mechanisms. As this relative advantage over alternatives continues to increase, the likelihood that alternatives might be selected diminishes, resulting in a state referred to as “lock-in.”

These choices are typically made because of some initial advantage that in effect gives the selected option a head start. The case studies are examined in order to identify the various elements of this theory.

4.3.1 Initial Advantage

As suggested above, the initial advantage in a path-dependency scenario is that little nudge that influences a decision in one direction rather than towards some other option.

In the case of producer-owned inland terminals, a variety of factors influenced the choice of this model. As both Driver (2001) and various interview participants explained, there was a generalized dissatisfaction amongst a segment of grain producers with the existing grain-handling system, and in particular with certain elements of that system. Producers wanted change, and the mechanism for such change, not surprisingly, would need to take a form different from the status quo. Attempting to use organizations such as Saskatchewan Wheat Pool or any other of the grain-handling companies, therefore, was not an option. Further, because of this alienation towards SWP, the notion of using a co-operative structure to address change was unattractive, even though there might have been advantages to choosing that organizational form.

Driver (2001) explains that while the Canadian government, especially the Grains Group, wanted the grain-handling system to evolve, it recognized that this would prove unpopular with many constituents. Rather than implement policy for such change, therefore, the government quietly supported the efforts of the group from Weyburn that was already proposing the type of change it wanted. Second, and extremely important, was the support and influence of particular highly positioned government officials, namely Otto Lang and Rod Bryden, who were able to open doors and provide support that proved immensely valuable. Bryden's role in developing the prospectus for the venture and becoming involved in the construction of the facility is a clear illustration of his vision for an evolved grain-handling system that included a network of such producer-owned facilities. The resulting enterprise, WIT, became the prototype for subsequent similar ventures.

With the community-based hog initiatives, it was again a combination of the circumstances of an evolving industry and the efforts of particular individuals with given visions that nudged forward the community-based model (Storey et al. 1996). With the demise of the grain transportation subsidies, prairie producers were faced with the reality of having to do something closer to the point of production with the grain they were producing. Farmers were also getting seemingly mixed messages that they needed to diversify while specializing. The means to address these contradictions was for producers to invest in value-added ventures, thus diversifying, without having to actually be involved in the operations, thus remaining focused on specialized production.

Meanwhile, the founders of Quadra and later, the management of SWP, wanting to capitalize on a growing pork market and recognizing the advantages of economies of scale available through large-scale production, developed models that would allow them to pursue such ventures. Put simply, these organizations were driven by a profit motivation that required significant capitalization, and farmers and other rural residents were a possible source of such investment capital.

One interview participant explained that in the Quadra case, the founders designed the organizational form and the business strategy such that it would satisfy their own need for investment capital, yet hold some natural appeal for potential investors. While these were business ventures first and foremost, the model was easily presented as part of a large rural revitalization opportunity. By adopting the model, communities could create jobs and a market for feed grain, while offering investment opportunities for the whole

community, and the chance of some cost savings for producers benefiting from the use of effluent as fertilizer.

Another interview participant explained that in the SWP example, the organization was in the midst of rapid growth, diversification, and integration strategy, and had recently accessed considerable working capital through an equity conversion exercise. SWP leveraged this capital with debt capital from banks, and wanted to further leverage those funds by having communities invest a majority share in the hog ventures. The community-based model, had it worked as planned, would have allowed SWP to become a major player in the hog industry very quickly, and with minimal amounts of capital.

Various interview participants agreed that working with a community-based group also offered advantages when contending with the opposition to intensive livestock operations that can frequently occur. By having the projects locally driven, community residents were less likely to oppose them, even if they were not investors.

As mentioned earlier, the first New Generation Co-operative in the United States was American Crystal Sugar. When the sugar-beet growers decided that they would try to purchase the processing facilities, their banks insisted on a particular business organizational structure (Fulton 2003). It borrowed features from some co-operatives in California, but was principally a new hybrid blend of co-operative and corporation, with the added feature of delivery contracts. The end product was the New Generation Co-operative model, which is now quite widely used in the US. The choice for producers was not so much about how the new organization would be structured, but whether or not they were willing to use the model being imposed by the banks. Other circumstances,

including the timely increase in the price of sugar, made the venture very profitable, and in turn, put a great deal of money in the hands of the farmers—in some cases enough to cover their investment in the first year of operation. The new model was therefore the product of the needs and will of farmers, and of an idea imposed by bankers and blessed by the good timing of favorable market conditions.

4.3.2 Positive Feedback

Positive feedback is the phenomena in which some action in a particular direction produces results that support or encourage further action in the same direction (Jacobs 2000). For the purpose of this research, we will consider how the choice of a particular organizational form created conditions that supported the subsequent choice of that form.

In the case of the producer-owned inland terminals, we can observe how the creation of the first venture opened the door, albeit not for some time, for subsequent ventures. WIT demonstrated that once the challenges were worked out, particularly related to financing and operations, these ventures could be profitable and also bring about some of the change to the grain-handling system for which producers were hoping. Interview participants indicated that observation of these changes encouraged other producers to take similar action, in turn creating an even broader range of accrued benefits, which were even more visible to yet other producers, who in turn pursued their own ventures. Some of the benefits observed included lower handling fees, premiums paid according to protein levels of grain delivered, trucking costs being covered for producers further away from the terminals, cost-effective grain condominium storage, and handling being charged on cleaned grain only rather than on dockage as well. While such benefits were

realized by farmers at the time of delivery, other important although longer-term benefits—such as returns on investment or contributions to an evolved grain-handling system—were also driving subsequent producer-owned terminal development.

With the community-based hog barns, similar self-reinforcing advantages were developing. In the earliest Quadra projects, many of the development tools—such as tailored contracts and agreements among the management group, the project proponent group, and other investment groups—needed to be created and refined. As each subsequent project was undertaken, these tools became more similar to those previously used and required less time and resources to tailor for new initiatives. While the project managers admit that the relationship-building component of such enterprises remained comparable on each new effort, the legal element, once refined, was easily applied over and over without adjustment. Part of the challenge in the development of each project was being able to illustrate to prospective community groups the proven benefits of the enterprise. Each subsequent project made this task less cumbersome as it became yet another illustration of how the model worked and of the real benefits accruing to host communities.

It is perhaps not surprising that the SWP attempts to develop a large network of barns was less successful. Whereas the Quadra model benefited from the demonstrated success of earlier projects, SWP was determined to quickly unveil and then undertake the development of a vast network of large hog barns. The rate at which this was to occur—five projects per year for five years—allowed little time for potential host communities to observe the relative success or failure of earlier projects. Instead, as one interview

participant suggested, communities had to base their decision on their faith in a somewhat untested model. If positive feedback occurred at all, it was in a form that actually discouraged investment. The interview participant added that in those cases where SWP opted to proceed without sufficient community support, it became evident that communities could get the projects even if they did not provide investment capital. While this strategy allowed a few individual enterprises to proceed, it limited SWP's ability to undertake its overall strategy, which relied on significant community investment.

Examining the experience of New Generation Co-operatives, at least in the United States, certain self-reinforcing or positive feedback mechanisms become evident. First, the relative financial success of some of the ventures, particularly where they seem to have clustered, has driven subsequent NGC development. This is most evident in Renville, Minnesota where many of the producers involved in the first NGC, reaping financial reward from their investment, were able to reinvest in later projects. Put simply, participation in an NGC required the capital that was acquired by participation in an earlier NGC.

The attention that the NGC model received also drove further development. Press coverage increased with each new project, and each additional bit of recognition helped to create greater awareness of and interest in the model. This positive feedback cycle continued and is clearly evident during the period of so-called Co-op Fever, during which time use of the model seemed to take on a life of its own.

When we compare this with the Canadian experience, it is not surprising that development here has been slow. The earliest attempts at using the model are just now at a stage

where they might be judged, either by potential adopters of the model or by the media reporting on its effectiveness.

4.3.3 Economies of Scale

Economies of scale considers whether the cost of production of each additional unit decreases. In this study, the question becomes whether the use of a given organizational form becomes more economical with each subsequent application.

In the case of the producer-owned inland terminals, there were clearly economies gained with each respective venture. WIT was continually used as a model for how to proceed. Addressing any inefficiencies identified during WIT's early years contributed to the efficiency of subsequent ventures. Much of the resistance to the development of WIT was likewise less of an issue for later efforts. And it was not only WIT that made a difference. Each subsequent project made the next one a little easier to undertake. With regard to accessing debt financing, a leader from one of the earlier ventures explained that while he had a difficult time convincing the banks of the viability of his own group's project, each successive group had it a bit easier. After a while, the banks were pursuing them rather than the other way around.

Similar economies of scale were realized with the community-based hog initiatives. As discussed above, as Quadra undertook each additional project, the resources required to work through the development process decreased. Time and energy spent on the model and its associated development tools were spread over more and more projects, making each one more economical. One interview participant indicated that lessons learned from earlier projects helped avoid costly problems with later ones, making the overall

development process increasingly efficient. One of the important lessons was that each venture needed to be treated as unique with regard to developing a relationship with the host community. Assumptions about how this might unfold could not necessarily be based on previous projects.

Because of the intended large scale of its overall hog initiative, SWP likely stood to benefit the most from economies of scale. However, because the organization only developed a fraction of its larger plan, many of these potential economies were never realized. The intent was to simply create carbon copies of the projects in various communities. It appears that, unlike Quadra's approach, less attention was given to the importance of tailoring the relationship developed with each community.

Many of the same types of efficiencies that developed in the cases outlined above can also be applied to the experience with New Generation Co-operatives in the USA. One additional advantage that resulted from the continued use of this model, and which resulted in further economies of scale, arose from the creation of a network of development support. Patrie (1998b) explains that this network included the contributions of financial institutions, universities, development agencies, the existing co-operative sector, and very importantly, a newly created professional infrastructure. While the earliest NGC projects were undoubtedly learning experiences for the professionals such as lawyers and accountants who worked on them, this became decreasingly so with each subsequent effort. Certain professionals developed expertise in the area of NGC development and were often retained for new enterprises, thus creating greater efficiencies (Patrie 2001).

In contrast, a lack of professional infrastructure in Canada helps to explain the relative slowness with which the model has been adopted here.

4.3.4 “Lock-In”

As explained in chapter two, “lock-in” is the state ultimately arrived at in a path-dependency scenario. At this stage, the cumulative advantages resulting from the self-reinforcing nature of the choice make it seemingly impossible to change course or consider alternative solutions to the given problem. Each of the case studies is examined below to consider whether lock-in, with regard to the choice of organizational form, exists, and if so, whether there might be some means to exit from that state.

There is clear evidence of lock-in with the producer-owned inland terminals. Each of the terminals has an organizational form similar to that of WIT, with one noteworthy difference. While WIT opted to resist the temptation of partnering with an existing grain handler, at least with regard to ownership, each successive venture has entered into that type of relationship. Leaders from both WIT and later projects admit that the advice WIT gave to other groups, and the preference of those group leaders, was to go it alone, or in other words avoid having to forgo some part of the ownership to the grain-handling companies. In each of these instances, however, for financial reasons, this was not possible. Most often, the banks providing debt capital for the ventures required a partnership with those companies.

While a variety of organizational forms might have been selected by any of these ventures, and the co-operative structure was even advised for WIT, none of the groups strayed from the model used on the prototype—WIT. Given the overcapacity of inland

terminals that currently exists on the Canadian Prairies, it becomes a hypothetical question to consider whether exit from such a pattern is possible. Rather than see any new ventures attempting the use of alternative models, it is more likely that we will witness the demise of some of these independent enterprises, given the recent competitive challenges from the large grain-handling companies.

It is not clear that the community-based model of hog-industry development has reached lock-in. While the advantages that the limited-partnership-conversion-to-corporation model offer are substantial, other industry players have opted for alternative structures.

Interestingly, the best Saskatchewan example of an operational NGC is in the hog industry and may well represent an exit from lock-in. As interview participants from this project explained, the leaders of the venture were determined that the enterprise be structured as an NGC and were prepared to forgo any advantages that a limited-partnership-conversion-to-corporation model might offer. This determination likely reflects a strong tradition of co-operative solutions to economic problems characteristic of the given community. The established industry player working with this producer group saw little difference, from its perspective, in how the new entity would be structured.

In the case of New Generation Co-operatives in the US, there is uncertain evidence of lock-in. Admittedly, at its development peak, many new value-added agricultural ventures were choosing the NGC structure when some of them could arguably have been better served by a different model (Patrie 2001). The instances in which the NGC model might not have been the best choice were those where it seemed to be misrepresented. In

some cases, the venture was not viable using any model, yet a misperception was put forth that an NGC could make any business work successfully. In other cases, the important role of producers as controllers of the organization was slowly replaced by investors as controllers of the organization. In those instances, again, a different model might have better served the development group.

A recent trend towards the use of Limited Liability Corporations (LLCs) rather than NGCs suggests that lock-in does not exist, and that producers are selecting the organizational form that best reflects the intent of their respective groups.

4.4 Case Study Analysis Overview

The following sections summarize the analysis provided above. Each of the three case studies is reviewed and salient points are identified. It is noteworthy that each of these cases illustrates how farmers, using new organizational models, created enterprises to address new problems. These problems, often described as “property rights issues” (Cook 1995) resulted from farmers’ involvement in “the new agriculture” (Fulton 2001a). While each of the cases has its unique characteristics, each exemplifies farmers creating new ways to address new circumstances. Further, in each case, farmers assumed the cost of creating the enterprises that would provide them with new benefits.

4.4.1 Producer-Owned Inland Terminals

By the beginning of the 1970s, a number of grain farmers on the Canadian Prairies began to express dissatisfaction with numerous elements of the existing grain-handling and -marketing system in Canada. This was a system that had served farmers effectively for

several decades, but that had failed to change to suit farmers' evolving needs. Many producers felt that the grain-handling companies, some of them farmer-owned co-operatives, were more interested in making money for the organizations than they were in looking out for the best interests of farmers. Likewise, some farmers felt that the Canadian Wheat Board was an outdated mechanism for marketing grain and that producers could do so more effectively on their own. Many of the producers who shared these ideas came together under the banner of the Palliser Wheat Growers Association.

One response to the dissatisfaction was the construction of producer-owned inland grain terminals. These facilities could receive, dry, clean, and ship large quantities of grain more efficiently than the facilities used by the grain-handling companies at that time. This translated directly into savings for farmers and provided a level of competition that some farmers felt was missing in the industry.

The Weyburn Inland Terminal was the first of the new facilities. It was fashioned after similar facilities already in operation in the United States, and served as the prototype for what is now a loose network of eleven producer-owned terminals in Saskatchewan. While the actual innovation in this case was the farmer-owned and -controlled enterprise, these ventures were also the vehicle for a variety of other innovations, such as rewards for high-protein grain, incentives for trucking, and farmer-owned condominium grain storage. These and other features all combined to provide an advantage over the status quo. In addition, this particular innovation was compatible with the experiences and values of the farmers involved, and other similar operational examples were observable for potential adopters. While the enterprise was somewhat complex for the earliest

adopters, it became decreasingly so with each additional venture. These characteristics combined to produce a diffusion experience consistent with the theoretical model described earlier. The rate of adoption yielded the characteristic logistic, or S-shaped, curve, suggesting that this approach to understanding diffusion is applicable to organizational form.

Likewise, the elements of path dependency theory fit well with this case. The earliest adopters held an initial advantage resulting from various circumstances, and once the first venture was complete and sufficient time had passed to prove its effectiveness, economies of scale resulting from positive feedback occurred. This process, in turn, led to a state of lock-in. Each subsequent incarnation of the model carefully replicated the earlier versions.

4.4.2 Community-Based Hog Barns

Community-based hog barns are a response to a changing hog industry. Many in the industry feel that viable hog production requires expensive large-scale facilities, which in turn require outside investment in the ventures. Both Quadra and Saskatchewan Wheat Pool had strategies to build such facilities, and developed organizational models intended to attract community-based investors, and in particular, farmer investors. During a period beginning in the early 1990s, farmers were receiving messages that they needed to diversify their farming practices, yet they knew that viability was often tied to specialized, large-scale operations. At the same time, farmers recognized that the cost of transporting their grain was going to increase because of the impending demise of the Crow Rate.

Because of this, it grew increasingly desirable for farmers to try to add value to their grain close to the point of production.

Investment in community-based hog operations was one way for farmers to diversify their activity, add value to their feed grain locally, and remain specialized in their own operations. The innovation in this case is the mechanism to pool investment capital for large-scale, hog-barn development. While Quadra was consistently successful in attracting investment capital from communities, SWP struggled and in some cases was forced to self-finance entire enterprises.

The community-based model used by both Quadra and SWP involved a fairly complex set of arrangements and strategies intended to exploit certain tax advantages. Representatives from these organizations, therefore, took great care to present the model in clear and consistent form, thus ameliorating the complexity. Although it was slower, Quadra's more conservative development approach allowed successive groups to look back and observe previous similar ventures. SWP's aggressive development strategy did not allow for this to occur. In both cases, there was limited trialability. For the most part, the decision was whether or not to invest, which offered little opportunity to test the model.

While both groups had effective communication channels able to outline the model and garner initial interest, SWP's channels were less able to sufficiently secure investors' trust. This might be explained, at least in part, by the changing role that SWP assumed with this initiative. Whereas SWP was typically viewed as a mechanism used by farmers to achieve their goals or to advance change, it was now dictating change as set out in the organization's strategic plan.

Examining only the characteristics of this innovation within diffusion theory might prove inconclusive in either predicting or explaining this particular adoption experience. Some of the characteristics might have predicted a quick adoption, while others would have suggested likely rejection. Also, both organizations appeared to have relatively effective communication channels. It might be surmised, therefore, that the difference in experiences reflects the difference in social norms related to the two organizations. While potential investors might have felt comfortable with Quadra pursuing a self-serving initiative, this might have been perceived as somewhat taboo for SWP, which was originally created by and for farmers and was intended to advance the interests of those people rather than those of the organization itself.

Applying path dependency theory offers further insight. Both organizations made timely entries into the hog industry, taking advantage of a growing demand for hogs, increasing transportation costs for grain, and a general interest by people to invest in ventures that might help sustain their communities. Entry into the industry at that time provided an initial advantage, while repeated use of the model created a self-sustaining positive feedback mechanism, which led to economies of scale. Given that other industry players continue to use different, but equally innovative models, however, it is unlikely that the community-based model has reached a state of lock-in.

4.4.3 New Generation Co-operatives

The New Generation Co-operative model was first developed in the early 1970s in the United States in response to the potential disappearance of a market for sugar beets in the Red River Valley. The model provided a mechanism for farmers to invest in the

processing of the commodity they grew, and the delivery contract feature of the model offered advantages to both the individual farmer and the organization. While the earliest applications of the model were largely imposed by the financial institutions backing the ventures, farmers quickly recognized the utility of the model. It is arguable that the success of the earliest sugar-beet co-ops was, at least in part, a product of the fortuitous timing of an increase in sugar prices. Not only did that price increase make the new processing venture viable, but it left many of the farmer/investors with considerable new wealth, which was often reinvested in other NGCs. The combination of high prices and the imposition of the model by the banks provided the initial advantage, while the reinvestment of profit from the earliest NGCs created the positive feedback system characteristic of path dependency theory.

While the NGC model might have seemed relatively complex for the first adopters, they had little choice but to try it. What might at first have seemed complex quickly became commonplace as later adopters, observing the earliest applications of the model, opted for NGCs in growing numbers. This record of development produced the classic logistic, or S-shaped, adoption curve characteristic of diffusion of innovation theory.

The rapid diffusion of the NGC model in the United States is explained, at least in part, by the development of a network of opinion leaders and change agents representing a variety of agencies, organizations, and institutions. Use of the NGC model also attracted considerable media attention, which fueled further interest and resulted in a positive feedback system. While the NGC model continues to be used, the growing popularity

of alternatives, such as limited liability corporations, suggests that a state of lock-in has not developed.

4.5 Summary

The purpose of this chapter has been to review the three case studies presented in chapter three and to determine if diffusion of innovation and path dependency theory can illuminate these experiences. The adopted innovations in question are the organizational forms used in the respective case studies. The various characteristics of each innovation, the social system entertaining adoption, the various communication channels present, and time, all factored into and influenced the respective innovation adoption decisions. While such considerations help to explain why the particular model worked or failed, they do not explain why each respective organizational form was repeatedly chosen in favor of others that might have worked as well or better. Path dependency theory and its notions of initial advantage, positive feedback, and lock-in offer a better explanation for this latter question. Overall, the case studies provide evidence that these theories are useful in better understanding the choices that have been made.

In addition to a general fit between the theory and the case studies, certain specific themes have emerged. As was proposed in the introduction to this study, the agricultural industry continues to change and so do the needs of producers. Responses to these needs often take the shape of producer-owned and -controlled enterprises that provide real benefits to these groups. The nature of the desired benefits in turn shapes the organizational form that producers will apply to the enterprises they create.

It is clear, especially from the NGC and producer-owned terminal cases, that an idea requires time to gain a foothold before it takes off and gains wider acceptance. It also appears that this wider acceptance is often a product of positive feedback.

The importance of communication networks was also clearly evident in each of the cases. While effective for one purpose, however, communication networks might be less effective for others. SWP's network, for example, was successful in spreading awareness and garnering initial interest in their idea, but was much less successful in creating the trust required to actually secure investors.

The implications of these and other observations are examined more fully in the next chapter, which draws conclusions from this research, speculates on their significance, and makes recommendations for how these new understandings might be used and further studied.

CHAPTER FIVE: CONCLUSIONS

5.1 Observations

The purpose of this research was to gain an understanding of how groups of producers choose the organizational forms that they use for the enterprises they create, and to examine why those choices are often replicated in favor of alternatives. While the last chapter examined the case studies using the theories provided earlier, this section identifies themes or trends that emerge from the analysis.

5.1.1 Solutions Change with the Times

As mentioned in the introduction to this thesis, agricultural producers have a long history of creating organizations that they own and control and which provide benefits to the group. As the context in which producers operate changes, so too does the nature of the organizations that they create. Different times call for different solutions, and these new solutions sometimes require the use of new organizational forms. This changing with the times is clearly evident in all of the case studies.

During the early 1970's, some prairie grain producers felt that the existing grain companies, many of which had been formed by farmers, were no longer providing the services and benefits they needed. Therefore, as had happened before, farmers created something new to meet their needs. While such action had previously often taken the shape of agricultural co-operatives, that model was no longer acceptable. Many of the

issues that farmers had with the existing grain handling system reflected its inability or unwillingness to change to meet the needs of farmers. Therefore, producers needed new organizations with new forms.

Viability in the hog industry likewise required changes that allowed industry players to reap the benefits of large-scale production. As large-scale ventures required significant capitalization, new models that could attract a broad range of investors were developed. The community-based organizational form satisfied the needs of the project developers. It also held appeal for potential community investors since it provided a mechanism for local producers to diversify their operations without actually having to produce hogs. In addition, other community members saw an investment opportunity that not only offered a reasonable rate of return, but also contributed to the sustainability of their rural communities.

New Generation Co-operatives were also a response to changing times and to groups of agricultural producers that were growing less homogeneous. Many of the existing organizations, particularly co-operatives, were designed to serve a relatively homogeneous group. As farmers grew increasingly diverse, so did their needs. The New Generation Co-operative model addressed this change, and the closed-membership nature of the structure insured that only those producers who could and would use its limited range of services would invest in it.

5.1.2 It Helps to Have Some Initial Advantage

While it is clear that in each case change was needed and that the solutions selected addressed those needs, there were arguably other solutions that might have been equally

effective. Why, then, were these particular models selected? Put simply, each of these examples held some initial relative advantage over the alternatives. This initial advantage gave the selected models a head start, which, as will be discussed in the next section, took on a life of its own.

Reviewing the development of the first producer-owned inland grain terminal reveals a number of factors that contributed to the advantage of that particular model. The terminal idea was consistent with the thinking of federal government agencies that wanted to change the grain-handling system, but who were reluctant to enforce such change because of its contentious nature. This congruity of producers' initiative and government preference translated into support for the group at Weyburn. The support took the shape of important contacts, financial assistance for exploratory development studies, and even the involvement of a government official who, after leaving government, developed the prospectus for the venture and later became directly involved in the construction of the terminal.

Local leaders behind the Weyburn venture were also well organized. Many of this group were leaders in the Palliser Wheat Growers Association, thus giving them access to a larger group of like-minded individuals. They were a determined group, willing to do whatever it took to implement change. Many of them were already involved in other similarly structured ventures and were, in general, less averse to risk. The nature of these individuals, combined with the other circumstances described above, gave the proposed model a clear initial advantage over alternatives.

When examining the community-based hog barns, similar types of initial advantage are apparent. The development group from Quadra had a clear idea of how they wanted the model shaped, and to a large extent, they were able to simply modify existing development tools such as relationship agreements and contracts. The timing of Quadra's earliest ventures also fit well with a general interest by community groups looking to invest in rural revitalization and by farmers hoping to diversify their activities.

Ironically, one of the factors that gave the NGC model its initial advantage was something that was imposed on the producer group. The financial institutions backing the earliest NGC venture insisted on certain features of the organizational form. While these features were ultimately acceptable to the group, the banks, in effect, imposed the model. A timely increase in sugar prices resulted in a windfall for the producers and created a perception that the model worked especially well. These factors—one imposed and the other perceived—put the NGC model at a distinct advantage over alternatives.

While initial advantage helps explain the earliest applications of the models, it does not fully explain why these models continued to be used.

5.1.3 Economies of Scale

In each of the case studies it is clear that once an initial advantage was created, the use of the respective organizational models developed a self-sustaining nature. This self-sustainability is largely a product of the economies of scale resulting from replication.

A considerable amount of time, effort, and money went into the development of the producer-owned inland terminal. WIT was intended, at least by Rod Bryden, as the

prototype for a network of such ventures across the prairies. The development of the model was a fixed cost that subsequent groups did not have to fully incur. While some of these costs related to the design of the facility, they also included those costs associated with convincing producers of the viability of the model. Likewise, many savings that were gained by addressing operational inefficiencies at WIT were directly applied to subsequent ventures.

Economies of scale were realized in the Quadra experience through continued use of a model that worked well for that development group. Costs related to the development of contracts and various other relationship agreements were incurred early and were spread increasingly wider as additional community projects were undertaken.

Likewise, with NGCs, early development costs were not necessarily incurred on subsequent projects. The benefits that producer/investors reaped were in many cases reinvested in additional NGC projects, thus forming a positive feedback loop, which had ventures yielding profits that were applied to new ventures, which in turn yielded additional profits, and so on.

5.1.4 Perception Matters

One of the points stressed in the theory chapter was that perception matters as much as reality when considering advantages of one choice over some other. This was clearly illustrated in the case studies.

With the producer-owned terminals, the perception was that the existing grain companies were unwilling to change and that the only way that change could happen was if farmers

did it for themselves. There was also a perception that the best way to create competition was through these particular ventures. While the grain companies might have been slower to change, it is clear that today's industry has many, if not all, of the features called for by producers. Ironically, while the producer-owned facilities may have contributed to a more competitive environment, it is unclear whether they will be able to survive in it.

While the Quadra development model is clearly a means for that organization to secure investment in ventures designed to make Quadra profitable, it has been portrayed as something more than just an investment vehicle. For many investors, the community-based model was a community-friendly model that would serve to revitalize rural areas.

In contrast, the SWP model, while intended to portray a local-ownership-and-control nature, failed to do so. Instead, many producers and other rural residents viewed the development effort as a large organization dictating rural development. As noted earlier, this was likely a considerable shift from the perception of SWP as the means for rural residents and farmers to shape their own reality.

The NGC model in the United States also gained some advantage from a misperception. As discussed earlier, a coincidental increase in sugar prices meant that sugar production was extremely profitable at the time when the first NGCs were being scrutinized. At least in part, the high rating they received reflected this turn in the market rather than any inherent characteristic of the NGC model. Likewise, during the peak of Co-op Fever, NGCs were viewed as the answer to the problems of any group of producers. Unfortunately, in some of the later cases, groups discovered that a nonviable business idea would not lead to something successful just because of the organizational form they chose.

Interestingly, perception played a different role in the Canadian NGC experience. In that case, because some producers viewed co-operatives as unable to address current problems and because the word co-operative appeared in the name of this new organizational form, there was an assumption that NGCs would be unable to meet producers' needs in the same way that traditional co-operatives were unable to.

5.1.5 It Takes Time

It was clear from each of the case studies that time plays an important role in the overall acceptance and use of a given organizational form. As was evidenced with both the inland terminals and the NGCs, considerable time had to pass before the rate of adoption increased significantly. With the inland terminals, sixteen years passed before the second venture began. With NGCs, nearly two decades passed before a significant number of these ventures were developed. In each of these examples, this time-lag provided an opportunity for the ventures to fine-tune their operations and thus gain efficiencies. This period also provided potential adopters with the opportunity to observe those first efforts and evaluate their ability to address their own issues. These were, in essence, trial periods during which the respective models were tested.

While the timeframe is more compressed with the Quadra model of community-based hog barns, it is still clear that the relative success of each project was dependent on the experience of the groups that came before. Potential investors needed to observe the earlier efforts in order to be convinced that the model provided the benefits it claimed to offer. In contrast, the SWP initiative was designed to unfold very quickly and left little

time or opportunity for investors to gauge the performance of the earlier incarnations of the model.

5.1.6 It's Not "Only" Who You Know ...

All the case studies displayed evidence of the important role that networks play in the spread of an idea. How the nature of these networks contributed to the overall experiences was equally illustrative. Considering the nature of a network is really an examination of the various nodes and of the types of connections between those nodes.

Networks of contacts such as those developed through common membership in the Palliser Wheat Growers Association or through membership in Saskatchewan Wheat Pool were critically important in spreading ideas and garnering support for them. These horizontal networks, with each member forming a node of the network, functioned to spread information among peers and create general awareness of the new ideas. While important for that type of function, other types of relationships, such as connections with nodes outside the social group were equally important.

An example of such vertical ties is seen in the ability of the WIT leaders to link with important contacts in government, which strongly influenced the outcome of that project. In contrast, while the ties between the nodes of the SWP network were useful for conveying information, they were less effective at conveying trust between the organization and its members.

The nature of the individual nodes also factors into a network's functioning. With the NGC experience it is possible to think in terms of super-nodes—individuals who were key to connecting both horizontally with producer peers and vertically with development

agencies, governments, universities, and existing co-operatives. Bill Patrie, in particular, is an example of a super-node.

5.1.7 A Convergence of Circumstances

In explaining the Co-op Fever phenomenon, Bill Patrie (1998b) refers to the notion of a convergence of circumstances. In other words, the various pieces of a development puzzle or network all came together, resulting in a flurry of NGC development activity. This type of convergence is evident in each of the case studies, where certain individuals, with the backing of certain agencies, addressing certain issues that were surfacing at particular times, all contributed to the eventual outcome. The absence of any of these pieces may explain why similar clusters of activity did not happen in other places or at different times with different groups of producers.

A comprehensive development plan might be able to identify and align all of the requisite pieces. It is more likely, however, that a plan will only identify some of the pieces and will conveniently happen upon others.

5.2 Speculations

As is often the case with research, certain findings can be presented with certainty, while related ideas can be offered only as speculation. This section examines some of the observations made above and takes the liberty of entertaining some additional, though not necessarily fully defensible, considerations.

It is interesting to speculate on how some of examples drawn from the case studies might have turned out differently had certain circumstances changed. Had the leaders of WIT

been familiar with the NGC model and its ability to address property rights issues, for example, might they have opted for that organizational model in creating the first producer-owned inland terminal? Might this, in turn, have spawned a flurry of development activity such as the Co-op Fever phenomenon in the United States?

Perhaps, given the importance that time is shown to play in the adoption process, the uptake of the NGC model in Canada is about to happen. Maybe the only reason it has not flourished is because sufficient time has yet to pass since the creation of the first ventures on this side of the border.

It is useful to consider whether initial advantages such as those discussed earlier might be created for future development initiatives. These advantages could be substantial and complex, such as legislated tax incentives, or they could be small and simple and allowed to grow with their own positive feedback.

Finally, representatives of producer-owned inland terminals have recently expressed concerns about their ability to survive in the current competitive environment. If these organizations begin to fail, is it reasonable to assume that other organizations, perhaps using different organizational forms, will emerge to respond to the newly evolved needs of producers?

5.3 Contribution to Theory

It is useful to consider what the process or the findings of this type of research have contributed to the theory that was used. Given that the theories of diffusion of innovation and path dependency had not been used much with regard to organizational form, the first

question must be whether this has proven to be a legitimate approach. The answer is simple and clear. These theories, as illustrated in chapter four, are helpful in understanding the selection of organizational form.

This research provides new ways of thinking about innovation and the selection of organizational form. The new organizational forms were created and applied to address new issues faced by farmers. The research illustrates that organizational form is indeed a type of innovation, and like other innovations, its spread occurs as part of a process rather than as a one-time event, and it does so with a cost. The congruence between theory and experience is especially evident when examining the rate of adoption. The logistic, or S-shaped, curves characteristic of the theory clearly reflected the rate of adoption in both the producer-owned terminals and in the NGC case studies. Likewise, the characteristics of the innovations explained why the particular diffusion experiences unfolded as they did.

Another relevant consideration is the utility of using these theories together. The advantage of combining these two bodies of theory is that one fills in the gaps of the other. While diffusion of innovation theory is useful in explaining why certain choices are made initially, path dependency theory explains why those same choices are replicated in favor of other viable alternatives. Such understanding can be applied as part of strategic development efforts.

One additional contribution to the theory is the identification of a shortcoming, which in turn presents the need for continued research. There is only passing mention in the literature on diffusion of innovation of the need to examine the circumstances or

conditions that lead up to the period of study, or “time zero.” Clearly, what comes before time zero not only shapes the diffusion experience, but likely also explains the need that the innovation is intended to address. Such examination is critical to a full understanding of the diffusion experience and must be paid greater attention in further research.

5.4 Application of This Research

The findings of this research, apart from contributing to a general understanding of the agri-food industry, and more specifically, of the cases profiled in this study, may have some practical applications.

Government or other agencies undertaking development initiatives will likely find value in understanding why certain initiatives employing particular organizational models or strategies have experienced varying levels of success or failure. Being able to apply the various theories used in this research to understand a context and to plan an approach may prove beneficial. In addition, understanding how positive feedback can create self-sustaining enterprises may encourage the undertaking of small projects in favor of tightly structured megaprojects intended to solve all problems.

Likewise, existing organizations may better appreciate the value of understanding the context in which they operate, the changes that are occurring in that environment, and how these changes translate into new needs for their respective constituents. Put simply, better-informed organizations might be better equipped to remain relevant to their stakeholders.

5.5 Recommendations for Further Study

Like most research, this attempt to answer some questions has given birth to a collection of other possible research problems. It will be important to continue to track the development of NGCs in Canada and the US. Of particular importance will be a determination of whether the newly formed organizations are indeed NGCs, or if their transformed nature actually represents a new model.

It would also be useful to revisit the development of producer-owned inland terminals and to consider viewing them as a type of hybrid co-operative. It appears that many of these organizations have characteristics similar to others that are being labeled co-operatives. Framing their development as a product of the failure of traditional co-operatives might yield interesting results.

Another possibility is a more detailed examination of the community-based hog barn model to better understand what benefits producers are reaping. Marceniuk (2000) has illustrated that individuals benefit as investors in these ventures, but what benefit farmers receive as producers requires closer consideration.

Finally, the theoretical notion of lock-in deserves closer attention. Of particular interest would be a study that examined the bounds of lock-in in greater depth. While current theory suggests that the benefits derived from a path dependency scenario discourage exit from lock-in, it would be useful to consider whether these self-reinforcing benefits are actually finite in nature. If this is the case, then exit from lock-in might simply relate to waiting until the benefits of an existing model are realized. Existing organizations could convert this understanding into ensuring that they remain relevant to their stakeholders and that the benefits they provide do not deplete.

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APPENDIX A: TERMINALS INTERVIEW QUESTIONS

1. What were the main reasons for producer-owned terminals becoming so popular? What problems were they meant to address?
2. Describe the model of ownership for me.
3. Has this model evolved over time? How?
4. How was the model developed? By whom?
5. What role did other organizations play in the spread of the model? Was there a so-called “template”?
6. Is it easier for subsequent groups to undertake such a venture? Why?
7. Tell me about the role of industry partners.
8. Who are the people that typically get involved? Is there some common thread?
9. Tell me about the role of things such as trust, communications, or leadership in these ventures.
10. Describe the communities where the terminals have located.

APPENDIX B: HOG BARNs INTERVIEW QUESTIONS

1. What motivated/instigated the move into the hog industry in this form?
2. Describe the model for me in its original form.
3. Has the model evolved over time? How?
4. How was the model developed? By whom?
5. What role did other organizations play in the spread of the model?
6. Where are the various operations and when did they come to be?
7. Did the formation of subsequent operations become easier because of experience with the previous ones?
8. Who are the people typically involved in the operations? Is there some common thread that you can weave, or a common profile?
9. Tell me about the support that was available, or conversely, about the obstacles that got in the way.
10. What can you tell me about the role of things such as trust, communications, or leadership in these ventures?
11. Describe the communities that have been receptive to the idea and that have succeeded in developing a community-based hog operation.

APPENDIX C: NGC INTERVIEW QUESTIONS

1. What were the main reasons for setting up this NGC? What problems was it meant to address?
2. Describe the model of ownership for me.
3. Did the idea for the model evolve over time? How?
4. How was the model developed? By whom? Why not use a different model?
5. What role did outside agencies or individuals play in the development of the model? Were you following a so-called “template”?
6. What were some of the roadblocks to setting up as an NGC? Do you think it will be easier for subsequent groups to undertake such a venture with this model? Why?
7. Tell me about the role of industry partners.
8. Who are the people that typically got involved? Is there some common thread?
9. Tell me about the role of things such as trust, communications, or leadership in this venture.
10. Describe the community where this venture is located.

APPENDIX D: THE INTERVIEW PROCESS

Interview Process

Research for this thesis included eleven, in-depth, semistructured interviews. This approach involved identifying a set of questions (outlined in appendices A, B, and C) to be explored with each respondent. The order in which the topics were explored and the wording of the questions were not predetermined, but rather unfolded as the interviews evolved.

Interview subjects were selected based on their knowledge of and involvement with the ventures examined in the case studies. The respondents fell into two broad categories, roughly representing farmers/investors and managers/developers of the projects. These individuals were often identified in the literature as key leaders, or in some instances, recommended by other individuals who were initially approached to participate in the research. In each case, it was believed that the individual would possess intimate, first-hand knowledge of the particular project, and in some instances, of the entire cluster of enterprises. Every respondent was eager to participate in the research and in most cases exhibited great pride in being associated with their respective projects. Given that such consistent interest in participation might suggest a biased sample, it is important to clarify that the respondents still differed in their respective recollection and interpretation of events.

The interviews were conducted at or near the ventures in question. Each conversation was tape-recorded and subsequently transcribed and checked for accuracy. While the interviews were intended to last one to one-and-a-half hours, they typically lasted closer to three hours, reflecting the eagerness of the interviewees to share their stories. Interviews were conducted with the understanding that the interviewee would remain anonymous.

Information Acquired from the Interviews

The interviews yielded rich material on the history of the respective ventures, providing details on topics ranging from the initial ideas to retrospective analysis. The interviewees not only helped to explain the nature of the ventures, but also provided a wealth of information on the context in which the enterprises were formed. Given that the interviewees included both farmers and managers, the range of perspectives offered different interpretations on the ways in which the organizations were formed, how they evolved, and their current state of being.

While the interviews provided important information on the details of the projects, they also revealed the strong sense of pride these individuals felt for their organizations. And although informants were generally regarded as leaders of their respective projects, they were quick to attribute any successes to the contributions of others.

Contribution to the Research

The interview process, as well as the information collected thereby, make important contributions to this research in general and in particular to the development of the case studies.

The face-to-face nature of the interviews provided a chance for the researcher to build trust and rapport with respondents, thus making it possible to obtain information that the individuals might not have revealed had other data-collection methods been used.

The interviews provided the researcher with a measure of the concrete, as opposed to the abstraction more characteristic of other research techniques. One gets a clear sense of the reality of working with hogs when conducting an interview in a setting with these animals nearby. Likewise, an interview that takes place while driving around a community rich in co-operative values and experience shapes the researcher's understanding of the contribution those organizations have made to the community. These experiences also help to capture the passion the interviewees have for their projects.

Because of their evolving nature, interviews allowed the introduction of ideas or topics that surfaced naturally through the course of the exercise, but that might have gone unexplored had other methods been used. This process accommodated the documentation of the context of the ventures in terms of the wider society and also historically, providing the means to test understandings of how the organizations evolved with those people intimately associated with them. In general, the interviews yielded information that facilitated the development of the case studies to a depth that might otherwise not have been possible.

Importantly, interviewing people who were part of the ventures offered a view from the inside, versus the interpretation from the outside that other methods often depend upon. The extremely rich and telling vignettes helped to pull pieces together into a larger and more colorful picture of the whole. The personal contact captured feelings and opinions that added life to the data. Further, the nature of the process permitted open-ended exploration of topics and elicited responses that were couched in the unique language of the respondents.

Because the interviews were flexible, they provided a means to gauge the relative importance of particular contributing factors. Certain topics, for example, commanded greater attention, and interviewees thus frequently returned to them. This method also permitted the exploration of whether particular phenomena were unique to the respective ventures or could be applied generally across the entire cluster of development. In general, rather than simply documenting the case studies, the interview approach allowed some evaluation and testing of the theories employed in the research.