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Choosing to Defect from Cooperation—the 2003 Collapse of California Pear Bargaining

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Choosing to Defect from Cooperation—the 2003 Collapse of California Pear Bargaining

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Abstract

Bargaining in agriculture is collective because an agent represents multiple principals, the farmers, in contrast to an agent who negotiates on behalf of a single or corporate entity. Collective bargaining adds the complication of securing commitments from several individuals, each possibly having a slightly different reservation value for an acceptable agreement. A disadvantage for a collective bargaining agent may emerge when negotiating with an agent representing a single or corporate principal rather than another collective group of principals. Such asymmetry provides opportunities for a single agent to exploit differences among heterogeneous principals when negotiating with a collective agent.

The structure of California pear growers consists not only of a wide distribution in the size of farm production, but involves a special class of very large growers who also operate packing businesses for marketing to non-processed, fresh markets. These grower-packers had gradually withdrawn from membership in the bargaining cooperative, but they provided tacit cooperation by refraining from taking contracts until the association concluded its negotiations with food processors. This form of tacit cooperation provided a credible commitment for California pear bargaining for several years, until the system failed in 2003 under aggressive negotiating pressure from one of the fruit processors.

Tacit cooperation between two entities involves interdependent decisions. Such situations are frequently analyzed using game theory techniques. The Prisoners' Dilemma (PD) is the most famous situation of tacit choice between cooperation and defection. But in the California pear case of 2003, the decision outcomes were asymmetrical. Interviews of the bargaining association manager and representatives of the grower-packers included ordinal ranking of choices and outcomes. These results produced two different game matrices that reflect their different interpretations of the available choices and what they believed was their counterpart's ranking. Game theory provides a structure for specifying choices that result in either achieving or abandoning joint maximum gains from cooperation. Applying game theory to a historical case study keeps the research focus on contingencies and reasons other than irrational or behavioral limitations that lead to defection from cooperation. Lastly, a game theory framework helps point out several remedial strategies that collective bargaining agents could use to establish credible commitment.

Key words: collective bargaining, agricultural cooperatives, credible commitment, game theory.

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Introduction

Collective bargaining is created when several individuals who sell common services and products hire a single agent to negotiate prices on their behalf with buyers, who are usually firms with large operations and financial net worth. The term "collective" distinguishes this process as a group action in contrast to bargaining by an individual. Labor unions have been the leading and most visible proponents of collective bargaining, but a parallel program has been carried out by agricultural cooperatives.

Collective bargaining in agriculture shares similar challenges with labor unions in establishing member commitment, but with important differences. Farmers operate independent businesses, in contrast to the team production conditions for many workers who belong to labor unions. Similar to the competition labor union members have with non-union workers, not all farmers in a relevant market join bargaining associations. Nevertheless, non-member farmers often play an important role in support of agricultural bargaining that is not provided to labor unions by non-member workers. Agricultural bargaining associations often depend on tacit cooperation of non-member farmers to refrain from taking contracts until associations conclude deals with food processors. This form of tacit cooperation provided credible commitment for California pear bargaining for several years, until the system failed in 2003 under aggressive negotiating pressure from one of the fruit processors.

Cooperatives were organized for bargaining in agriculture during the early decades of the 20th century but many associations ceased operations from the late 1930s to the mid-1950s. Agricultural bargaining became more formally established when state governments passed laws in the 1960's to sanction these collective actions. In addition, the federal government passed the Agricultural Fair Practices Act of 1967, AFPA (Agricultural). AFPA was designed to prevent food processors from boycotting or otherwise coercing farmers for participating in collective bargaining (Torgerson 1970).

The California Pear Growers Association (CPG) started its bargaining activity in 1927 (Stoll 1998). It ceased operations during the late 1930s and re-emerged in 1953. Another hiatus in CPG's activity occurred for a period of five years when its bargaining efforts collapsed in 2003. The CPG directors re-initiated collective bargaining for the 2008 crop.

Agricultural bargaining involves several distinctive challenges for establishing commitment credibility. Growers of products with a limited period of time for storage have to develop outlets for diverting their harvested crop in the event of deadlocked negotiations, but the alternatives for California pears and many other crops involve costly distress-selling. The credibility of a bargaining association's commitment is also diminished, but not undermined, by the

condition that members are not “silent partners” and can influence a decision to hold to or retreat from a position.

Another source of uncertainty for bargaining associations is the share of the crop supplied by non-member growers. In the years leading up to 2003, CPG members supplied almost 60 percent of the canneries’ pear market in California. About thirty-five percent of the California Bartlett pear cannery market in 2003 was supplied by a relatively few large growers who were integrated with packing shed businesses. The non-member “grower-packers” (GPs) traditionally gave tacit support for pear bargaining by waiting until the association negotiated a contract with the canneries before making their own deals. Tacit support from this group was an essential part of CPG’s commitment credibility.

This study focuses on an embedded game within the overall bargaining process between pear growers and a cannery. The two parties in the embedded game are the pear growers represented by CPG and by five GPs who, as a group, faced the same choice and operated with similar incentives and pay-offs. In 2003, a cannery business tested the credibility of the pear growers’ commitment by forcing the GPs to make their decision about accepting a contract before the bargaining association had completed its negotiations.

During the post-2003 period, CPG took steps to revise its organization, and these actions are discussed as they pertain to ameliorating commitment weaknesses. Additional commitment strategies are examined that CPG and other associations could use to counteract aggressive tactics to defeat collective bargaining.

Interviews were conducted with four individuals representing CPG and GPs and with two managers involved with parallel negotiations for peach growers. These participants in the events of 2003 are identified in the reference section by name and date of interview. The interviews of the CPG manager and GPs or their representatives provided the ordinal rankings of outcomes on the choices they had confronted in 2003.

Bargaining and Commitment

A formal bargaining process provides important mutual benefits for all participants while at the same time being an adversarial struggle. Agricultural bargaining is a vehicle for a commodity industry to reduce market uncertainty by sharing expectations about supply and demand (Hueth and Marcoul 2003). Information sharing in a bargaining process narrows down a range of prices, but reaching an agreement on a contract price is frequently contentious. Negotiations often follow a pattern of aggressive posturing and tactics in the early phase and gradually become more accommodative as both sides move to an agreement (Bunje 1980). The bargaining process can be prolonged because an obvious price

rarely exists to bring the negotiating and posturing to an end (Schelling 1956, 1963).

For members of a bargaining association, the prospect of having no agreement means being without a home for their product (Bunje 1980). Nevertheless, members appreciate the importance of making pre-commitments and holding to them during a bargaining process. Bargaining associations accomplish pre-commitment in part with membership agreements that restrict members from seeking their own deals with food processors.

Further steps to contractually bind growers would increase costs. In addition, more restrictive contracts would likely cause many growers to not sign up and leave an association with a market share too small for credible commitment. Although an aggressive processor may attempt to undermine collective bargaining by making contracts with nonmembers, most food processors understand their interdependence with farmers and want long-term prosperity for their industry. Given this relationship, bargaining associations operate in most years without having the credibility of member commitment severely tested.

Bargaining associations have tried to reduce the costs and burdens of collective commitment by seeking government regulations that constrain the strategic moves of the companies they deal with in negotiations. Yet, as described below, these regulations are limited in their power to restrain aggressive negotiating by processors.

Rules and Conventions of Agricultural Bargaining

Several states and the federal government have passed laws to support the operation of cooperative bargaining associations. The sanctions and enforcement provided by agricultural bargaining laws are weaker than those that apply to organized labor (Bunje 1980). The major purpose of AFPA is to protect growers from being boycotted by food processors because of their membership in a bargaining association. It does not require that processors bargain in good faith, that is, no take-it-or-leave-it offers, with a cooperative association. However, good faith bargaining in price negotiations with associations is required to be in compliance with the California Food and Agriculture Code, CFAC (California).

Bargaining associations in California have recourse to a conciliation process for mediating a negotiation deadlock. Conciliation is a procedure for non-binding arbitration, authorized by the CFAC. During the early 1980s, CPG wanted to establish a determinant process for reaching price agreements that would supplement the state sanctioned conciliation procedure. In 1985, CPG revised its contract to establish a commitment for 1986 to binding arbitration in the event bargaining became deadlocked by the beginning of the period for negotiating the next harvest (Marcus and Frederick 1994). Henceforth, the

binding arbitration provision was included in each annual contract for the next season's negotiation. In 1993, the arbitration provision was activated to resolve a negotiation deadlock with Del Monte.

About one-third of California Bartlett pears are sold in fresh produce markets. CPG's master contract established that "...the association is the exclusive sales agent for the processing pears of its members" (CPG 1999). Bartlett pear growers may annually change their allocation of the harvested crop between the fresh and processed markets. In contrast to cling peaches that have no fresh market, long-term tonnage contracts are more complicated for an association to negotiate for a large group of pear growers because of the slight year-to-year changes in individual grower allocations between the two types of markets.

The CPG contract also provided for pear growers to obtain agreements for use of shipping containers from the canneries. Furthermore, in the event of delays in reaching a price agreement, its contract provided that harvested pears could be shipped to the canneries with a final price to-be-determined, and a provision for payments to growers "... equal to the Processor's last *bona fide* offer to the Association..."(CPG 1999). These agreements helped canneries to reduce delays and receipt of overly ripe fruit.

Growers and Grower-Packers

The marketing of fresh pears is primarily done by the packing sheds, which over time have become owned and operated by large GPs. Their primary activity is selling their crop and other pears, either procured or consigned to them from other growers, to the fresh market.

In 2002, there were 350 active pear growers in California, including about twelve GPs. A couple of the GPs were considerably smaller than the largest of that subgroup (Barton 2008). CPG's membership in 2002 was about 250 growers, including a few GPs, but the majority of them were not members. About ninety pear growers, who were not GPs, were nonmembers. Their share of the processed pear market was less than ten percent and they did not have a major impact on the collapse of collective bargaining in 2003.

Bartlett pears are harvested in two pickings, the first in early July and the second in mid-August. Much of the second pick for GPs consist of sort-outs they sell to the canneries. The annual collective bargaining process is usually initiated in the late fall of the year prior to the next season's crop. Nonmembers, whether operating exclusively as pear growers or as GPs, benefit by having a bargaining association establish a price floor for selling to canneries. The GPs conventional practice in selling their sort-outs was to wait for, or defer to, CPG to conclude a contract before seeking deals with canneries.

Signature Fruit

After the bankruptcy in 2001 of a large fruit processing cooperative, Tri-Valley Growers, the John Hancock Company received ownership of seven of the Tri-Valley canneries in California. John Hancock established a new fruit processing business called Signature Fruit. It chose a former manager of CPG to lead its new fruit processing firm.

In the 2001-03 period, Signature Fruit was the second largest fruit canner in California, with about five firms in the industry. Signature was a close second in sales volume to Del Monte, and both firms were substantially larger than the other three canneries.

As a cooperative, Tri-Valley Growers was not a participant in bargaining with grower associations; rather, it matched the price that CPG negotiated with other canneries. Signature Fruit processed the 2001 pear crop and followed the Tri-Valley Growers practice of taking the prevailing price that CPG reached with other canneries. In its first full year of operations in 2002, Signature Fruit offered prices to bargaining associations that they accepted without demanding that the cannery engage in a formal bargaining process.

The manager of CPG recalls being disappointed in 2002 that Signature Fruit had not as yet participated in a formal bargaining process. It meant that CPG had still not established its master contract that provided a framework for negotiating the next season's pear crop, including the provision for binding arbitration. But CPG entered the 2003 season expecting Signature Fruit to participate in a conventional bargaining process (Barton 2008). Market expectations for 2003 were not considered to be especially unfavorable for grower bargaining. California pear growers had been making progress in reducing orchard acreage since 2000, declining from 15,000 to 13,500 acres in 2002. Bartlett pear production had declined in three of the last four years, from 311,000 tons in 1999 to 232,000 tons in 2002.

Early in 2002 the manager of Signature Fruit announced at a public meeting that the John Hancock Company wanted to sell its fruit processing subsidiary (Estrada 2002). The manager of CPG believed at that time that the company's plan to sell Signature Fruit would provide it with an incentive to avoid major conflicts in its bargaining activities. In retrospect, the cannery's announcement may have been an attempt to gain some bargaining advantage by signaling that it no longer had a long-term stake in the prosperity of the industry.

Negotiating an Unconventional Offer

CPG had initiated negotiations with Del Monte for the 2003 crop during the late fall of 2002. They came away with a contract for \$218/ton, which was only slightly below what they had anticipated. CPG was optimistic going into its meeting with Signature Fruit about negotiating a price equal to what was accomplished with Del Monte. The association also expected to establish its

master contract with provisions for binding arbitration for the following year (Barton 2008). Note that the lowest price negotiated with any cannery retroactively applies to all earlier negotiated cannery contracts.

At the first meeting Signature Fruit offered a price of \$190/ton, \$28/ton lower than what CPG had recently negotiated with Del Monte. Furthermore, while Del Monte had followed the usual practices on terms, Signature Fruit was offering a 3-year “price” contract. The \$190/ton would be fixed for three years, which would eliminate the annual process of price discovery and diminish the role of the bargaining association over that period of time. Its contract offer also imposed much higher fees for shipping pears beyond certain minimum distances to the cannery that would be divisive for members if it were accepted by CPG.

Signature Fruit offered a contract that CPG would not accept. CPG continued to negotiate for better terms with Signature Fruit while other canneries awaited the outcome. If these negotiations were to become deadlocked and irresolvable through conciliation, slightly more than half of the crop would be processed by Del Monte and a few smaller canneries, with the remainder facing dim prospects in finding an alternative market.

Before carrying-on with further negotiations, Signature Fruit threatened CPG that it would send contract offers with better terms to nonmembers. When CPG responded by questioning such action as a violation of the CFAC provision for good faith bargaining, Signature Fruit denied it had such plans (Barton 2007). Yet, news of this threat spread to members prior to the end of the “opt out” period for 2003. Some of CPG’s membership, including the one major GP member it had, subsequently opted out for the 2003 season.

In 2002 CPG had about a 58 percent share of the market for processed pear sales, but the defections in 2003 left it with less than 50 percent, according to its board chairman (Loben Sells 2008). Although it would have to bargain with diminished negotiating power, CPG assumed the GPs would follow the customary practice of waiting for the association to complete its negotiations. With the GP’s tacit support, CPG assumed its commitment credibility was adequate to pressure Signature Fruit to re-negotiate.

In hindsight, the lack of having a previous year’s contract to establish provisions for concluding an agreement was detrimental to CPG’s bargaining effectiveness. CPG had no recourse to binding arbitration with Signature Fruit. In addition, CPG members were unable to obtain containers and agreements on harvest-time deliveries. With the lack of containers and agreements to ship, members would not be able to deliver pears to the cannery to be priced later; another provision CPG had to do without given the lack of a previous year’s contract with Signature Fruit. This fact opened up an opportunity that Signature Fruit could offer the GPs. If the time period for seasonal bargaining ended without

an agreement, the major option for members would be to deliver to the GP sheds (fruit packing houses) and have their pears sold on consignment.

After a few months of CPG's efforts to negotiate better terms, the cannery carried out its threat to send an offer to nonmembers. They selected five of the largest GPs, offering \$198/ton for five years, i.e., \$8/ton higher and two years longer than the contract offered to CPG. Furthermore, the offer was delivered with a twenty-four hour time limit so that it was, in effect, non-negotiable. Such take-it-or-leave-it propositions violate the good faith bargaining clause of the CFAC. However, the good faith bargaining clause does not apply to negotiations with individual farmers or GPs.

The Signature Fruit offer set up a decision game of "cooperation versus defection" for the GPs. Although the selected five GPs would each make individual decisions, in this context, they can be viewed as making a group decision because of their common incentives as both large growers and packers of pears for the fresh produce market. Furthermore, it was a group decision in terms of the impact being either that enough of them would take the offer so that Signature Fruit could operate even if CPG held-out, or enough of them would choose to defer from contracting to support the CPG hold-out so that the cannery would be pressured into negotiating a better deal for growers.

Interdependent Choices

A game theory presentation is used to specify the interdependence of CPG and the GPs decisions as to outcomes or pay-offs and to examine whether choices were dominated or contingent. Signature Fruit's offer to the GPs may have rendered a choice for cooperation to be dominated by a decision for defection. Or in the case of a contingent-decision game, Signature Fruit's tactic of making a twenty-four-hour offer to the GPs reversed the conventional sequence of CPG as the first mover. In having to make the first move, the GPs believed it was better to defect from tacit cooperation.

Signature Fruit's divide-and-conquer strategy is depicted as a two-part game tree in Figure 1. After deciding not to accept Signature Fruit's offer, CPG tried to negotiate a better deal. After a few months, Signature Fruit made an offer to the GPs. This second offer set up the interdependent choices between the GPs and CPG, as depicted in Figure 1. As an extended form game, the decision order is presented with the GPs positioned as first movers.

The GPs' decision was either to "defer" or "take" contracts on their sort-out pears. The defer choice is the convention of tacit cooperation by waiting for CPG to conclude its bargaining process before they seek deals with canneries. The take choice amounts to defection from cooperation.

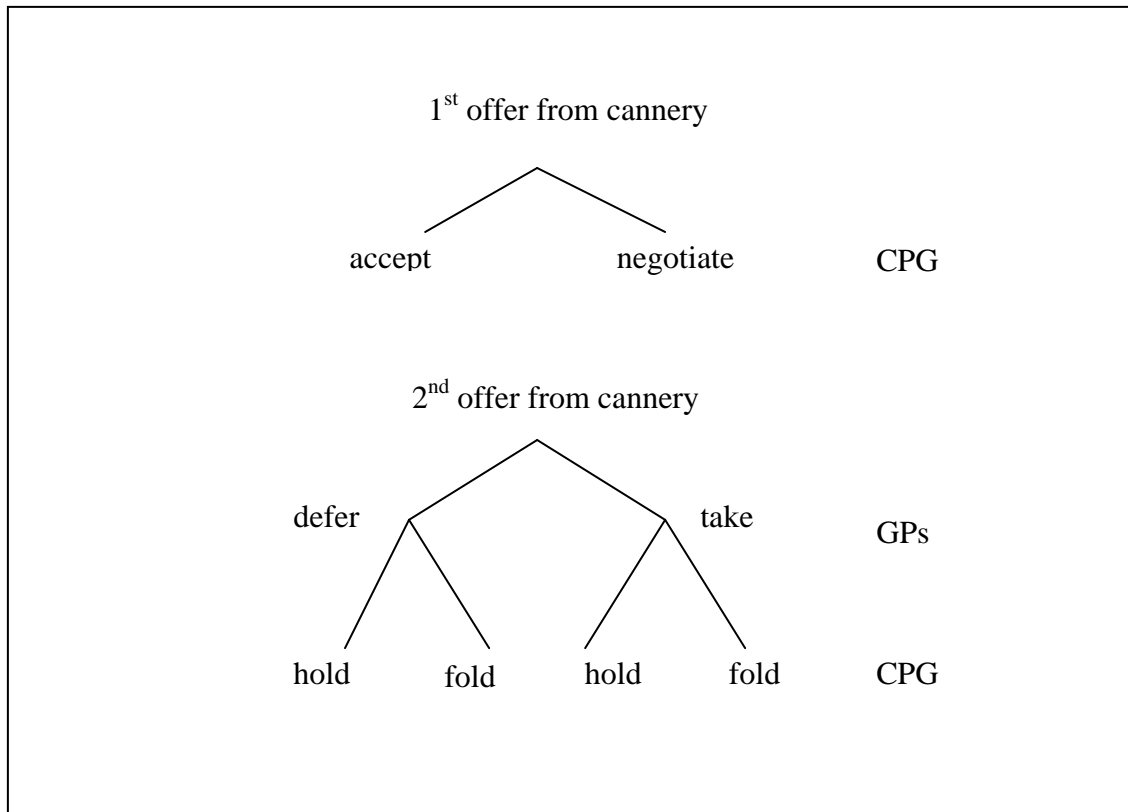


Figure 1 – Interdependent choices

CPG had the alternative to hold-out, labeled as “hold,” to keep negotiating with Signature Fruit for a more favorable contract. A hold decision represents cooperation in the sense of keeping the bargaining cooperative together and active in negotiations.

CPG’s other choice was to fold, a decision that represents defection from cooperation in a different sense from that of the GPs decision to take. To become inactive for a 3-year period the association would be abdicating its role in collective bargaining. If CPG were to have made the first move by accepting the 3-year offer, the GPs would then have pursued contracts with the canneries.

The 2nd offer is presented in two matrix forms in Figures 2 and 3 for two slightly different versions of the GPs’ preferences. The pay-offs for the players in Figures 2 and 3 are expressed as ordinal rankings, with 4 as most preferred. CPG’s preferences or pay-offs are in the rows of the lower corner of each cell, and the GP’s are in the columns of the upper corner of each cell.

Figure 2 presents the perspective of the GPs in making a decision about Signature Fruit’s offer. In hindsight, the GPs had some regrets about taking the 5-year price contract but at the time it had seemed minimally acceptable and offered

a simplification for one aspect of decisions they have to make as growers and operators of packing sheds. They recall their decision as having been made under pressure. One of the GPs stated that he would never again accept a multiyear fixed price contract (Hemly 2008).

		GPs	
		Defer	Take
CPG	Hold	3 4	4 1
	Fold	1 3	2 2

Figure 2—GPs have a dominated choice

The GPs dislike of the offer they took raises a question of why had they not deferred, as was the usual practice. The GPs had gradually withdrawn membership in CPG. In part, they were dissatisfied with previous contracts that CPG had negotiated and they disliked not having control of shipping to the canneries, as required in the membership agreement. In 2003, under the pressure of a take-it-or-leave-it offer, they did not have the confidence that CPG would succeed in negotiating a deal that would be worth the risk in passing-up a decision to secure an outlet for their sort-out pears.

The condition of “no communication between parties” is a key assumption in game theory analysis and raises the question of why the GPs did not jointly confer with each other and with CPG. According to the CPG board president, the large GPs would have subjected themselves to antitrust violations had they either discussed price coordination with CPG or among themselves (Loben Sells). If the GPs had been CPG members they would have had the limited immunity from antitrust prosecutions that applies to cooperatives for making collective price agreements.

A defer decision by the GPs would have resulted in either a joint maximum in the northwest cell or their worst outcome in the southwest cell (Figure 2). Their usual practice of tacit cooperation by deferring from contracts

was based on the expectation that CPG would eventually succeed in negotiating a contract. Prior to receiving the twenty-four hour limited offer, the GPs were tacitly cooperating. Although they had concern for securing a market outlet, none of the GPs had initiated an individual deal with Signature Fruit. In other words, the GPs had placed some credence in CPG to be able to negotiate an improved contract from the first offer Signature Fruit had extended.

A take choice, if CPG were to hold, produced the highest pay-off for the GPs. Their packing sheds would receive additional pears for consignment sales from association members who, due to their CPG agreement, could not make direct sales to Signature Fruit or to another cannery. A take choice, if CPG were to fold, also produced a higher pay-off for the GPs, based on their preference ordering in Figure 2.

When asked about the opportunity for consignment sales if CPG had held out, the GPs asserted that such a development was not critical to their decision to take the contract. Their stated reason for departing from their traditional practice of deferring to CPG to negotiate a contract was their concern to have a market outlet for sort-out pears.

In Figure 2, the take choice dominates the defer choice because in the take-column each of the two cells are higher than the corresponding preferences in the adjacent defer-column. How CPG might choose affected the outcome but did not affect the GPs' decision. In the Figure 2 version of the pay-offs, Signature Fruit succeeded in offering a contract that convinced the GPs that defer was a choice dominated by the take alternative.

By contrast, the game in Figure 3 reflects the ranking of GP preferences based on the CPG manager's interpretation. In his perspective, the pressures on the GPs and the possibility of losing a market for their sort-out pears were remote and did not dominate their choice. In his opinion, the GPs expected CPG to hold and in that case, a take choice would result in their highest pay-off, the northeast cell. The CPG manager's perspective is explained in the following quotation:

“The non-members who signed up on this deal are for the most part large, fresh fruit packing sheds. After packing for fresh, they sell ‘sort-outs’ to the canneries. These are the guys that are ‘big enough’ to negotiate their own deal and don’t need the Association. They thought that by taking this deal they would get larger cannery contracts, and Association members, having no cannery contract would have to deliver their crops to the sheds (for consignment sales). This was a case of greed over good sense since the Association eventually signed on as well. The result is the sheds did not get larger contracts. They got the same volume but at \$37/ton less than last year.... So much for ‘being large enough to

negotiate for themselves.’ By going around the Association they lost millions.... This is a very sad outcome for an organization that’s been around for 50 years and made millions for growers. Another result is that many growers have gone bankrupt and have removed or abandoned their trees. In retrospect, none of this was necessary” (Barton 2007).

The respective preference orderings of the two players in Figure 3 create a contingent choice game. The preference rank in one column is not higher in both of its cells than the other column, and the same applies when comparing the two rows. The outcome for each player is contingent on an uncertain choice to be made by the other player because both players lack a dominant choice.

		GPs	
		Defer	Take
CPG	Hold	3 4	4 1
	Fold	2 3	1 2

Figure 3 – Contingent choices

For the decision game in Figure 3, a case can be made either for expecting CPG to hold or to fold. A hold decision by CPG may have resulted in losing the cannery market from Signature Fruit in 2003, but not from Del Monte and three small canneries. Furthermore, the long-term strategy of bargaining associations is to establish a reputation for commitment to hold to a position. The GPs may have regarded CPG as having a credible commitment to hold, and then their decision to take would have resulted in their highest pay-off.

A fold decision may have been suggested by the fact of CPG’s reduced market share, and by the knowledge that Signature Fruit’s owner was not going to stay in the business for the long-term. The GPs preference in the southwest over the southeast cell is based on their traditional practice of preferring to have CPG establish a contract before they sought deals.

The contingent choice game was resolved by Signature Fruit's tactic of using a take-it-or-leave-it offer to make the GPs decide about a contract before CPG made its decision. The GPs as a group were put in the position of being a reluctant "first mover." Signature Fruit had forced the group less likely to hold-out into making its choice prior to a decision by the group more likely to hold-out. The GPs decision started a cascade of member pear growers of CPG clamoring for capitulation.

In either recounting of preferences and motivations, Signature Fruit had cleverly divided the CPG members and the GPs. Although CPG had agreements preventing members from selling outside of the association, these contracts were insufficient to establish a credible commitment to hold to its bargaining positions. Members, through their board of directors, were not silent partners and had the final say about holding-out or not. Members pressured the CPG board of directors to have the manager accept Signature Fruit's terms, which at that point in time was the five-year price contract that was offered to the GPs. The board of directors then closed CPG's operations for the five-year period.

In the fold-and-take outcome, CPG members got the five-year, \$198/ton contract. For the preference rankings in Figure 2, the southeast cell (2, 2) is a result where both types of pear growers receive their next-to-worst pay-off. For the preference rankings in Figure 3, the southeast cell (2, 1) is a joint minimum for the two players. In either version of the game, the cannery achieved its maximum – receipt of a large tonnage of pears at the low price it desired.

For the John Hancock Company, gaining relatively low prices in a five-year contract and the elimination of pear bargaining for that period of time was surely viewed as a boon to its prospects of finding a buyer for the cannery. In 2006 the Seneca Fruit Company bought Signature Fruit from John Hancock.

Remedial Strategies

The collapse of CPG's bargaining effort in 2003 was in part the aftermath of the failure of a large processing cooperative and its replacement by a company with a short-term goal of preparing its canneries to be sold. But this exceptional circumstance merely exposed CPG's lack of credible commitment that stemmed from allowing heterogeneous pear growers to sort themselves into members and nonmembers of the association. The special conditions exploited by the cannery highlight the importance of being prepared for extreme tactics that seem improbable under normal conditions. Pear growers generally regard 2003 as a "wake-up-call" and have implemented organizational reforms for CPG (Loben Sells). These reforms are briefly summarized and three alternative strategies are also discussed.

The reforms being implemented in 2008 and the alternative strategies discussed below all involve an internal, self-regulatory, response. However, the

fact that CPG felt that it may have had recourse to law suits under the AFPA and CFAC, were it not for the reluctance of growers to serve as witnesses against the cannery, should be mentioned (Barton 2007). The AFPA contains provisions that diminish its enforceability so that the law has been infrequently used (Marcus and Frederick 1994). Proposals to reform the AFPA have not yet been legislated. Some of CPG's lack of preparation for negotiating under extreme conditions may have occurred in part if management and directors had believed that AFPA and CFAC were more enforceable than they actually are.

Building Grower Unity

CPG's major vulnerability was dependence on the GPs to not take contracts from canneries until the bargaining association had completed its negotiations. This form of tacit cooperation by GPs may have been sufficient in CPG's previous bargaining experience but was a link easily broken by an aggressive adversary in the 2003 negotiations.

The GPs operate businesses that differ in some respects from growers who specialize in pear production without packing operations. CPG's bargaining program was designed to serve the needs of pear growers without accommodating those who operate packing sheds and sell large volumes of fresh fruit. But, some GPs value collective bargaining, as evidenced by the fact that even as non-members, some had donated money to support CPG (Barton 2008).

After 2003, directors of CPG held discussions with the largest GP businesses to find out if changes could be made with the pear bargaining association that would remove their past reluctance to become members. Their primary reason for eschewing membership was their rejection of the policy of having CPG as exclusive selling agent for all member pears sold to canneries. The GPs' involvement with fresh pear marketing made them reluctant to relinquish control over their sales to canneries.

A major revision was to convert CPG from being the exclusive sales agent of member processed pears into being a negotiating agent on price. In fact, most bargaining associations confine their services to negotiation of prices and terms of trade, with the California Tomato Growers Association as one well-known example. The new CPG establishes a minimum price in cannery contracts, and sales are carried out by growers or other intermediaries. Furthermore, CPG does not negotiate a uniform contract on as many of the non-price terms as in the past. As pointed out by CPG's current negotiating agent, the terms to be left out of collective bargaining will be for growers to negotiate and incorporate in their individual contracts (Christie 2008).

A more limited bargaining role for CPG may accomplish more grower unity that had been lacking in 2003. While growers who are not integrated into packing may receive fewer services, they are possibly better off with a CPG that

is representing a larger share of pear production for collective bargaining (Christie).

If it had been feasible to accomplish the association's reform in the middle of the 2003 bargaining season, such a strategic move would be a "promise" in the parlance of game theory (Schelling 1963). In the northwest cell of Figure 3, CPG would reduce its payoff to 3 by transferring one unit to increase the GPs' payoff to 4 based on making the reforms. In this case, the GPs would then have had the "take" choice dominated by the "defer" choice.

Contractual Relationship Strategy

Signature Fruit had negotiated with other bargaining associations in 2003, but the two largest in volume of commodity purchased were CPG and the California Canning Peach Association (CCPA). In contrast to Bartlett pears, cling peaches are strictly for canning and growers do not have a fresh market alternative. This distinction has resulted in the two associations having developed slightly different long-term strategies.

CCPA has title to 100 percent of their members' crop. By having title, CCPA can sell member peaches to other markets when there is an excess of what local canneries want to process (Bunje, 1980). A former manager of CCPA describes its strategy as building long-term relationships with local canneries with multiyear tonnage contracts and annual negotiation on prices (Schuler 2008). CCPA's strategic approach is worth considering even though its bargaining challenges differ from CPG's. Over its history when CCPA has been under extreme pressure to make price concessions, it would in return demand to have more years added to its multiyear tonnage contracts (Schuler).

Its experience in bargaining with Signature Fruit in 2003 is instructive. While these negotiations were challenging, CCPA had multiyear tonnage contracts with the previous owner of Signature's canneries. Although the former owner of these canneries was a cooperative, so that it did not negotiate contracts with bargaining associations, CCPA established a policy of negotiating a spot market price for peaches; those not under contract with processing cooperatives. CCPA maintained a master contract with Tri-Valley Growers to cover all such purchases of cling peaches with association members. This master contract was multiyear and remained in force with any subsequent new owner of the cannery.

The multiyear volume contract with CCPA that Signature Fruit inherited made it more difficult, in the opinion of the CCPA manager, for the cannery to demand a long-term price contract (Hudgins 2008). The cannery did prevail on a two-year price agreement for 2003-04. A one-year price agreement was negotiated for 2005, which was the last year of bargaining with the cannery before its sale to Seneca Fruit. In summary, multiyear tonnage contracts provide some protection from the consequences of discontinuity in annual price contracts.

CCPA's strategy of seeking multiyear tonnage agreements would not be as easily implemented by CPG because of its members' sales activity in fresh markets, and by the fact that the association will no longer be the exclusive sales agent for its members' processing pears. Nevertheless, some pear growers use multiyear tonnage contracts with canneries. It might be possible for CPG to negotiate multiyear tonnage contracts for individual growers and in the aggregate have a substantial share of the crop committed for delivery to canneries. These tonnage contracts would all be under annual price bargaining by CPG and would provide an on-going relationship that canneries could not easily separate from in the event of deadlocked negotiations and lack of access to binding arbitration.

Reducing Contractual Incompleteness

In the transaction-cost theory of organizations, the term "incomplete contracting" is applied to the high costs of contracting to address numerous unforeseen contingencies. Incomplete contracting applies to the institutional and behavioral constraints to establishing credible commitment (Williamson 1996). At least two potential strategies for credible commitment reduce incompleteness by correcting latent vulnerabilities.

An agricultural bargaining association establishes the power to negotiate prices by representing a substantial share of the market through its membership agreements. A threshold share is defined in this context as the minimum percent of the market that induces a processor to prefer bargaining in good faith to losing access to the association's product supply. An annual estimate can be made of the threshold market share required for effective price negotiating. Agricultural bargaining associations can use a trigger strategy of annual termination of their activities in any year they fall short of the estimated threshold share. This strategy was developed in game theory analysis to solve free rider problems when one party to a cooperative relationship chooses to defect. In situations of repeat games, the trigger action is referred to as tit-for-tat. In response to free rider defections from collective action, cooperating partners will make a one-time defection. In each subsequent time period, if defection reaches a trigger threshold, the cooperators will again reciprocate by also defecting (Iliopoulos and Cook 2000). In the case of CPG, when the opt-out period ends, if its market share were below a specified threshold, collective bargaining is terminated for the current season. Membership sign up is then offered for the next season.

When CPG was established in 1953, its by-laws contained a requirement that in any year membership share of sales to canneries fell below 50 percent, bargaining activity for that season would be dissolved. That requirement was dropped in later years when the bylaws were revised (Loben Sells 2008). The

organizational changes at CPG do not at present include reintroducing a required threshold market share in order to operate.

Another potential reform to establish credible commitment can be called a “silent partners” strategy because it would restrict directors and membership from forcing a CPG manager to fold during an operating season when negotiations are under-way. It could be applied separately or in conjunction with a threshold dissolution strategy. In the latter case, once a threshold market share is signed up, the members’ right to terminate a season’s bargaining process is curtailed. Although preventing members from having “voice” during negotiations would compromise their control of the cooperative, they would still have the “exit” option by opting out for the next season (Hirschman 1970).

Reducing incomplete contracting for commitment credibility can be accomplished in a variety of ways. Threshold market shares increase an association’s negotiating power. The silent partner strategy transfers a critical element of control from growers to a bargaining agent. The two contracting strategies would be more effective together but could be applied separately. However, obtaining agreement from a large number of agricultural producers to reduce incomplete contracting is often infeasible, which has been pointed out in a bargaining case study involving Java sugar producers (Dye and Sicotte 2006).

Conclusions

This study of the collapse of pear bargaining in 2003 reveals the illusiveness of, and the myriad of contingencies in, collective commitment. Collective bargaining involves constraining some of the freedom of individual decisions, which in turn is limited by how far a group is willing to self-impose constraints. Case studies provide a base of information for understanding the complexity for collective entities in establishing adequate credibility. Agriculture is just one industry with a distinctive challenge because it represents farmers who operate as independent entrepreneurs.

While bargaining by California pear growers involved distinctive characteristics, this case study points out challenges that are common to many cases of collective bargaining. Signature Fruit’s tactics are applicable to other industries. Its action to weaken the commitment of CPG and non-members by making special offers to the latter group is a frequently used tactic.

In this case study, a simple game theory presentation is used to point out how both sides of a cooperate versus defect choice were aware of their interdependence and the comparative consequences. This failure to cooperate left behind bitter memories and different versions about how decisions had been made. Two decision-games are used to reflect a slight but consequential difference in the preference ordering of choices.

In one version of the choices, the joint maximum was unobtainable because it would have required one party to make a choice that was dominated by its alternative (Figure 2). The other version had contingent choices, but the processor obtained the outcome it wanted by reversing the usual order in which the two parties made decisions (Figure 3). The party least likely to hold-out had to make a decision before the party most likely to hold-out.

This case study about the collapse of pear bargaining demonstrates the problems collective groups face in creating sufficient commitment credibility and describes how pear growers as a group were pressured to choose defection over cooperation. Lastly, a few potential solutions for establishing credible commitment for collective bargaining are discussed.

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