Innovations Using Farm Records Systems

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Understanding complex farming organizations is increasing in importance in the United States given the rapid consolidation of the agricultural production sector. Large farms in the U.S. use complex farm organizational structures for a variety of reasons. Many of the reasons for complexity do not differ from the reasons nonfarm businesses use complex organizational structures. The background information for this conference along with other presentations in this conference has documented the consolidation of different production entities in the United States and around the world. In addition, previous presentations have discussed the implications that added complexity has on data collection. Other presentations have discussed some of the reasons that farm organizations are becoming more complex.

The focus of this presentation is to provide a couple of cases of the organizational structures of actual farms in Kansas that are members of the Kansas Farm Management Association. The paper will begin by providing a background of the Kansas Farm Management Association. Next, an overview of reasons leading to additional organizational complexity are discussed. Two case farms will be discussed to understand the depth of the complexity and how that complexity may be accounted for to fully understand the implications for data collection. Finally, the paper will discuss conclusions regarding managing the complexity associated with data acquisition and performance measurement.

The Kansas Farm Management Association

The Kansas Farm Management Association has been in existence since November 1930. The original agreement indicated that the associations would provide account books for the farm business and family living, four farm visits by a farm economist each year, a weekly farm management newsletter, and a financial summary and analysis of the farm business at the end of

the year (Parker). The associations in 1930 consisted of 328 farm units. By 1950, there were 1,477 farm units. The analysis of the farms became computerized in the 1970s with electronic data available back to 1973. The number of farms analyzed reached 2,533 by 1979. The number of farms analyzed fell gradually to 1,448 farms in 2010.

Table 1 compares the cumulative net farm income on an accrual basis of the farms reported in the summary of the Kansas Farm Management Associations with the Kansas Net Farm Income reported by NASS. The percentage of farm income of the Kansas Farm Management Association farms ranged from 3.5% in 2005 to 9.4% in 2007. Thus, the membership of the Kansas Farm Management Associations represents an important amount of farm income in the state of Kansas. Given the farm types of the members in the associations, the percentage is higher in terms of crop income and lower in terms of livestock income.

Table 1. Comparison of Kansas Net Farm Income and the Net Farm Income Reported by the Kansas Farm Management Association Farms

	Net Farm Income		
Year	KFMA (million $)	Kansas (billion $)	KFMA Percentage
2000	82	1.136	7.19
2001	54	1.352	4.01
2002	37	0.403	9.11
2003	93	2.073	4.48
2004	109	2.228	4.91
2005	87	2.492	3.50
2006	72	1.332	5.44
2007	167	1.779	9.40
2008	179	3.426	5.23
2009	155	2.368	6.54

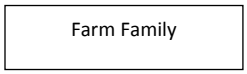
Source: Kansas Farm Facts and Kansas Farm Management Association Executive Summary

Reasons for Organizational Complexity

At the early stages of the farm management association, the organizational complexity could be represented by Figure 1. Most of the farms in the early stages of the associations and in many respects today can be represented by a sole proprietorship. As such, for this type of farm,

gathering information for analysis for either the farm business or family living was relatively straight forward. Certainly even early in the associations' life, there were partnerships and other more complex organizational structures, but the sole proprietorship was the predominant form.

Figure 1. Organizational Structure of a Sole Proprietorship



The organizational structure of farms in the Kansas Farm Management Association has changed from the 1930s; however, the sole proprietorship still makes up the bulk of the farms analyzed and economic activity though the farms tend to be smaller in size on average than other farm types (Table 2). In 2010, sole proprietorships made up 81% of the farms analyzed and represented 67% of net farm income of the membership ($153.5 million). Corporations represented 11% of the farms analyzed and 20% of net farm income ($45.9 million).

The category of super farms is those operations that are combinations of multiple farm entities (Table 2). These operations are classified as either partnerships or corporations depending on the main organizational structure. For example, a super farm could be a combination of 2 partnerships and 3 corporations. In this case, the farm would be classified as a partnership or a corporation depending on the volume of economic activity conducted by each entity. Examples of super farms will be provided below to better understand these entities and the added complexity that can occur in collecting data from and analyzing these operations. In 2010, there were 72 super farms in the Kansas Farm Management Association that represented 5% of the farms analyzed and 17% of net farm income ($39.5 million). The Kansas Farm Management Association farms are typically less representative of very large farms and very

small farms; therefore, the relative importance of super farms in Kansas is likely higher than stated here.

Table 2. Relative Importance of Organizational Structures of Kansas Farm Management Association Farms, 2010

Year	Percentage of Farms Analyzed	Percentage of Net Farm Income	Total Net Farm Income (million $)
Sole Proprietorship	81%	67%	153.5
Partnership	8%	13%	28.6
Corporation	11%	20%	45.9
Total	100%	100%	228.0
Super Farms	5%	17%	39.5

Source: Kansas Farm Management Association State Summary

The organizational structure of farms has changed for a number of reasons. As farms continue to consolidate and the government continues or changes its involvement in production agriculture, additional reasons for changing structures will continue to arise to meet the organization's goals. Historical reasons for multiple entities include tax implications, generational transfer of assets, a desire to limit liability, and government program payment limitations. Reasons that may become more important in the future include crop insurance provisions.

Actual Organizational Structures

This section will discuss two actual super farms in Kansas. These super farms are not typical of all farms but they certainly represent the complexity of organizational structure. Each of the farms will be discussed in the context of why the organizational structure came about and issues with regards to understanding implications for data acquisition and analysis. A super farm consists of multiple entities. To understand the complete picture of a super farm, one has to understand each of the individual entities and how those entities relate to the whole.

Super Farm Analysis

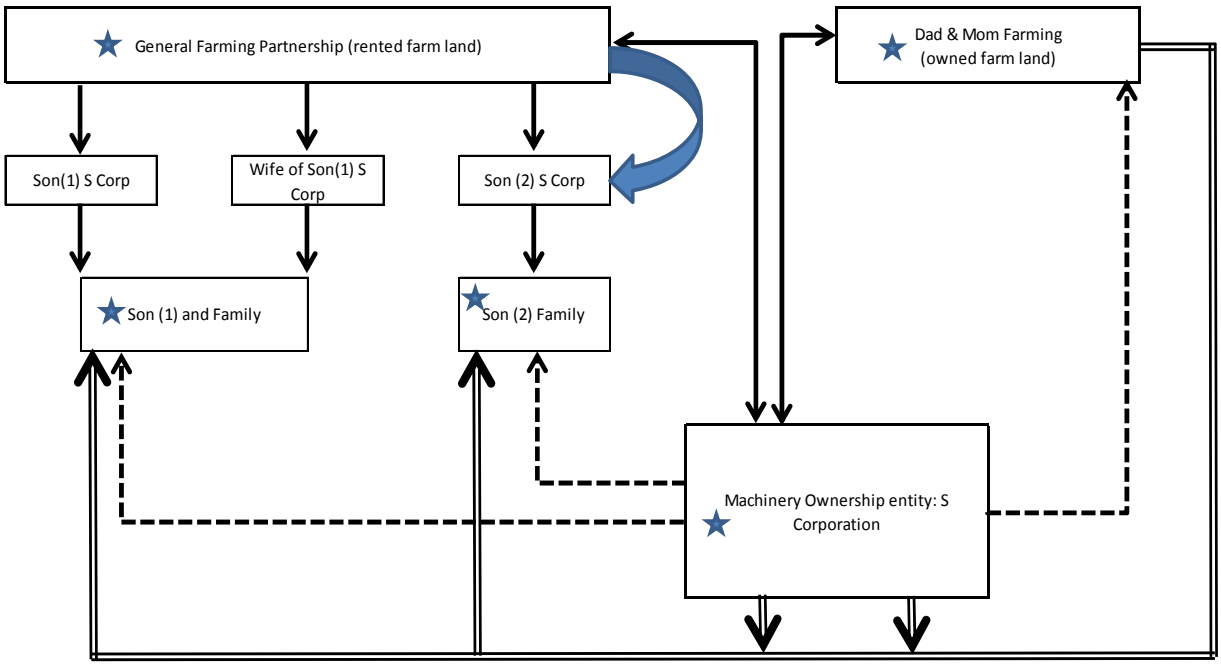
Completion of a "Super Farm Analysis" provides an opportunity to better analyze complex operations that involve multiple individual and/or entity sets of records. A super farm analysis involves the merging of the analyses of multiple farm operations into one analysis to more accurately reflect financial performance and position of the overall operation. In the Kansas Farm Management Association data, a super farm analysis is run in instances where two or more farms are closely related to one another in how they operate (shared labor, shared machinery, shared expenses, etc.). An initial analysis is completed for each of the pieces (individual operations or entities) of the super farm analysis. Both the super farm analysis and the analysis of each of the pieces can be used to analyze and compare financial performance and position of different aspects of the overall operation. Appropriate adjustments are made for any flow of funds occurring between the farms that are part of the super farm analysis. These adjustments could include loans received or paid, fund transfers, rent or interest payments, payments for custom hire or machine work, and purchase of inputs (such as feed, fuel, fertilizer, etc.), along with any other flow of funds occurring between the entities. For analysis purposes, the super farm and not the individual entities is the operation that is reported in the Kansas Farm Management Association summary statistics.

Super Farm #1

Super farm #1 began as a successful sole proprietorship. The operator owned all equipment and real estate. The real estate was free from debt. Son #1 chose to farm as a sole proprietor for 5 years. Son #2 also chose to farm as a sole proprietor for two years. The operations combined were increasing acreage farmed. Equipment replacement, upgrade, and the desire for larger sized equipment was becoming an issue for each of the individual entities. In

addition, government program payment limits were becoming an issue. The transfer of machinery and ultimately land to the sons was also becoming an issue. The farm is currently farming under 10,000 acres (4,000 ha) and is moving towards 14,000 acres (5,600 ha). To deal with the complexity of the operation and to solve some of the issues mentioned above, the farm structure moved from three sole proprietorships to the organizational structure depicted in Figure 2. Each of the entities marked with a star needs to be included in the super farm analysis in addition to each of the entities having separate sets of financial statements.

Figure 2. Organizational Structure of Super Farm #1



How does current organization work?

All machinery from the sons and dad were combined into a machinery S corporation (Figure 2). S-corporation status was selected to prevent self-employment taxes on profit generated inside the machinery corporation. Income for the machinery corporation is machine hire/lease from the Son's General Partnership and Dad & Mom Farming operations. The objective of the machinery corporation was to provide for fewer, larger items of farm equipment

with an eye to growth. Grain handling facilities are also owned inside of the machinery corporation. Distribution of profit from the machinery corporation are shown as dashed arrows transferring income from the machinery corporation to Son (1), Son (2), and Dad's individual tax return.

Dad and Mom's farming operations continue at a reduced level. Rented land is moved to son's general partnership (Figure 2). Dad and Mom are gifting discounted stock from the machinery corporation to the sons to transfer ownership of machinery. The transfer of stock has not been sufficient to manage the growth of the machinery assets in Dad and Mom's estate. Sons are planning on purchasing stock from the machinery corporation using an installment sales method creating a long term capital gain tax treatment of stock with underlying assets that would normally be taxed at the recapture of depreciation rate. The gifts are shown with the double line in the graphic above.

The general partnership of the two sons enables common bookkeeping of the main farming operations (Figure 2). All income and expenses are paid from partnership. Labor for the whole farm operation is paid from the General Partnership. Dad reimburses labor from his farm operations to the General Partnership. This reduces payroll tax reporting to a single entity with an intension of reducing the duplication for two sets of payroll reports. Profits from the General Partnership are distributed to Son (1)'s S Corporation, Son (1)'s wife's S corporation, and Son (2)'s S Corporation. All second level entities are S Corporations to eliminate self-employment tax on farming profits. Both Sons' derive wage income from the machinery S Corporation. This allows for "managed" contributions to social security (no more than $30,000 of wage base). To equalize income between Son (1) and Son (2), the general partnership does a guaranteed payment to Son (2)'s S corporation to create 50/50 net income reporting (curved wide

line in chart). Son (1)'s wife is used as an additional person for payment limit purposes. If Son (2) were married, then his wife would equalize the net income reporting without the need for the guaranteed payment method.

In addition to the self-employment tax management capabilities of using the S corporations, liability protection can be a valuable attribute. The S corporations provide a "buffer" between the general partnership and the individuals, protecting each from the unlimited liability in a general partnership.

One desirable attribute of S Corporations is that profits can be distributed to the stockholder. Therefore, profits from the general partnership can be transferred to the S corporations and then to the individuals. This allows the individual stock holder/partners to pull excess profits from the farming entity and use the cash to fund land purchases or accumulate cash in anticipation of land purchases.

Plans are underway to enhance the entity structure by adding another general partnership similar in setup to the first one to allow for differentiation of farming practices. Large farms or rapidly growing farms are not satisfied with current crop insurance options. Many operations want to use revenue protection on non-irrigated crops, but enterprise protection on irrigated crops. The cost savings on irrigation is substantial. If both cropping practices are included in the same entity, the costs are prohibitive for the revenue products on irrigated acres and irrigation crops cancel the coverage of enterprise insurance products on non-irrigated acres. Thus effectively you either have no insurance on non-irrigated crops using "enterprise" products on operations with both non- and irrigated acres, or you pay large premiums for "revenue" products on irrigated acres to get "revenue" coverage on non-irrigated acres. One way to provide economic choice is to have two general partnerships, one for irrigated acres and one for non-

irrigated acres. The machinery for all entities continues in the Machinery S Corporation. The other issue with crop insurance is that if you grow too fast in one year, new acres are required to use "T yields" for the yield base for coverage. This operation is a highly productive and does not want to lose the excellent yield history they already have established. By setting up new entities to absorb the acres below the "T yield" threshold the farm can transfer some of their yield history and increase their crop insurance coverage.

How do we analyze this farm operation in a Super Farm context?

The analysis has four objectives:

1. determine the overall profitability of the total farm operation along with composite enterprise analysis,
2. manage machinery cost and evaluate competitiveness,
3. monitor Dad and Mom's estate accumulation, and
4. monitor individual non-farm expenditures (family living) by household and total expenditures to review cash flow potential for land purchases or capital accumulation.

Process: Step One, accumulate the pieces

Accumulate income/expenses, crop production, and inventory information on the five "starred" entities. The S Corporations owned by the Sons collapse into their personal finances as a tax conduit entity. The five entities are the General Partnership, the Machinery Corporation, Dad and Mom Farming and family living, Son (1) and family, and Son (2) and family. Each entity is analyzed as a stand-alone operation.

Process: Step Two, super farm analysis.

To complete a super farm analysis all transfer payments among entities are backed out. Crop production information is combined from the general partnership and Dad owned operations for both owned and rented land. Allocation percentages for the individuals are determined and not changed so they shift income from the pieces. Then all pieces are combined into one analysis. The Kansas Farm Management Association analysis has a convenient system for managing data of "super farming" multiple entities. The complexity is getting the data ready prior to the compiling into one file for processing. This includes having an understanding of the relationships among the entities and understanding the flow of funds between entities.

Results

The overall profitability of the operation is easily derived from the "super farm" results. Enterprises and whole farm factors along with detailed cost are used as benchmarks with comparable operations in the Kansas Farm Management Association system. Machinery cost from the detailed cost analysis per harvested acre of the super farm is compared with the values found in the general partnership and Dad and Mom's farming operation. This is the benchmark to make sure that neither dad nor the general partnership is paying an inappropriate machine hire/lease at the individual level.

Individual family living can be examined to look for areas of difference between the entities. Son (2) operating as a single household does not have much family living whereas Dad and Mom and Son (1) spend more. Son (2) uses excess capital (cash) accumulation to loan to the entities to offset operating loans. Son (2) is accumulating cash in anticipation of buying land when values stabilize or fall in the future.

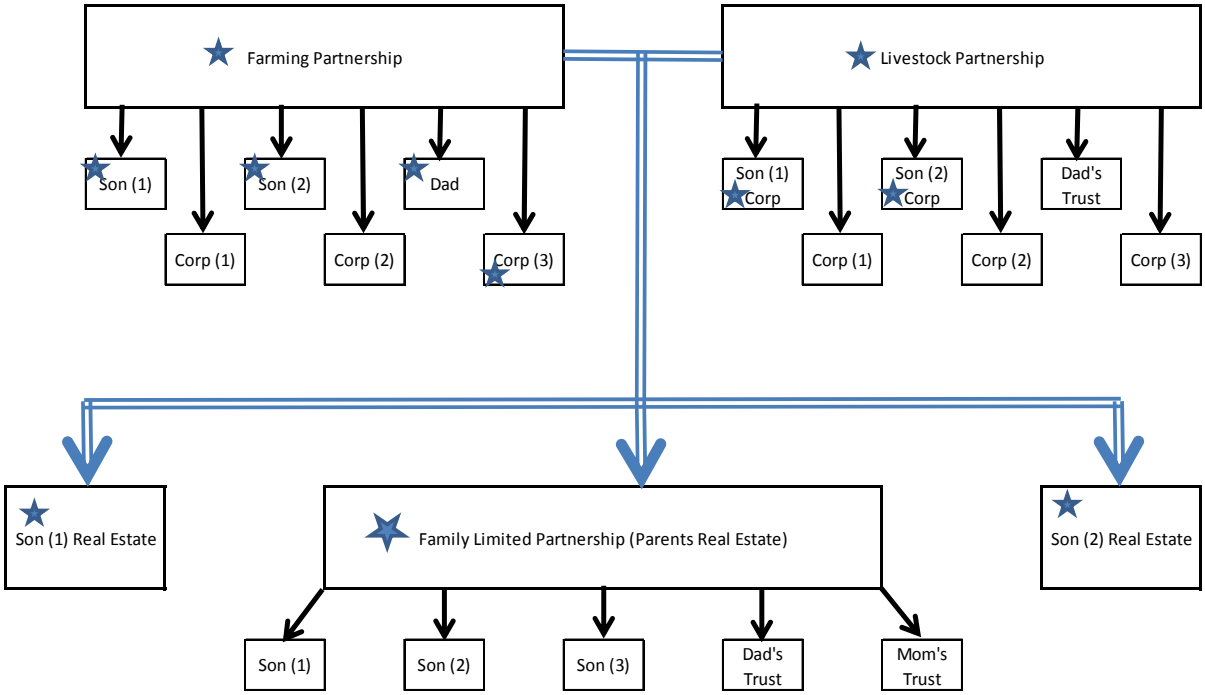
Dad's net worth is monitored in his individual analysis to identify estate planning objectives and progress with his stated goals. There are non-farming family members that are taken into consideration with the Sons in the farming operation. Dad and Mom are reducing their management influence with about 80% of management in the hands of the Sons.

Super Farm #2

The farm began in the 1940s as a sole proprietorship with dad and mom. There are three sons, two of which have been in the operation for over 20 years. A third son (son 3) is not involved with the operation but does want the asset accumulation and preservation that the farm can provide. The farm consists of over 10,000 acres (4,000 ha) of which ½ is irrigated and ½ is non-irrigated. The livestock operation consists of more than 600 beef cows. In addition, there are feedlot facilities that have not been used in the most recent years. The size of the farm has not changed appreciably over the last 15 years. Dad and mom accumulated considerable real estate that continues to have debt financing.

To deal with the farm's various objectives, the organizational structure represented in Figure 3 evolved. A farming partnership was formed roughly 20 years ago to manage FSA payment limitations. A livestock partnership was formed to mirror the farming partnership. The livestock partnership was formed to provide fringe benefits and allow for deductions of housing and personal expenditures as corporate benefits under C corporation rules. Two S corporations were formed by Son (1) and Son (2) to facilitate passing income to the sons. In addition, 3 C corporations were formed.

Figure 3. Organizational Structure of Super Farm #2



Land was contributed to a family limited partnership discounted at more than 30% to reduce the risk potential of estate tax liability upon the death of dad and mom. This partnership allows for the 1/3 interest of Son (3) in the land to be preserved to provide for eventual retirement returns. To further complicate the organizational structure, Son (1) and Son (2) have purchased real estate as individuals, jointly together, and with dad.

How does the current organization work?

All farming machinery is held in the Farming Partnership (Figure 3). All wages are paid by the farming partnership. This simplifies the payroll reporting to one entity and allows for accumulation of fewer, larger pieces of equipment for the operation. The Livestock Partnership purchases feed from the Farming Partnership. The Livestock Partnership frequently does NOT have the profitability to pay market value for feed consumed. Payment limits have been maxed a

few times in the past 15 years, but for the most part payments have been less than the payment limit.

The double lines show the flow of rent from the two entities to the land holding Family Limited Partnership and the Sons outside of the family limited partnership (Figure 3). Cash rents have been generally near fair market value but have fallen behind in recent years with the rapid increase in rental rates in Kansas. Also real estate notes are now paying off such that rent isn't needed to cash flow the debt payment schedule. No serious discussions have taken place in the past few years as to the need to increase land purchases. Dad is aged (80s) and doesn't want to accumulate more debt. The boys have not allowed sufficient profits to flow into their personal hands to be in a position to purchase more real estate individually.

The Farming Partnership exposes Son (1), Son (2), and Dad to higher self-employment taxes if profitability exists (Figure 3). This has driven the family to limit machinery purchases or to divert profits to the Livestock Partnership by subsidizing the feed cost to the Livestock Partnership. This rolls the profits into the corporations owned by the two sons. Housing, medical, and household operation fringe benefits are deducted inside Son (1) and Son (2)'s C corporation.

How do we analyze this farm operation in a Super Farm context?

At the current time only the Farming Partnership is analyzed by the Kansas Farm Management Association (Figure 3). This only evaluates the profit of the farming part of their operation. It does do a good job of quantifying enterprise profitability and cost competitiveness with their peer farms in Kansas. While whole farm variables are useful, they are not representative of the whole operation. To correctly evaluate the operation, each of the starred entities would need to be considered. Efforts to analyze the Livestock Partnership would

increase the value of the whole farm and enterprise analysis given the transfer pricing used from the Farming Partnership to the Livestock Partnership.

The family living values are accumulated in many entities (Figure 3). The individual data from the personal records for Son (1), Son (2), and dad and mom would need to be combined with the data from the C Corporations where personal expenditures are deducted as fringe benefits. This would enable for an accurate measure of the non-farm expenditures.

Real estate debt is spread among three entities, Son (1), Family Limited Partnership, and Son (2) (Figure 3). The real estate assets and debt would be captured by running an analysis on Son (1) and Son (2) individual records. Real estate values, loan activity, and debt load would be captured by a separate analysis of the Family Limited Partnership.

The correct process of analysis would be to analyze the pieces and then combine them (after transfer payments are removed from the pieces) into a "super farm" analysis. In this case it would be very difficult and time consuming with so many entities to track. Currently only a portion of the entities are in the Kansas Farm Management Association (Farming Partnership, Son (2)'s individual and C Corp, and Dad and Mom's taxes). The rest of the entities are prepared by a separate tax and accounting service. It isn't easy to cross those territorial boundaries. From a data acquisition standpoint, it would be difficult to pull the entire operation together to get a true picture of the profitability of the farm given the different accounting services used. In addition, the professional skills necessary to handle this size and scale operation would be limited to long term experienced farm managers. Had a complete super farm analysis been provided over the past 20 years and more full participation in the multiple entity structure, the family could have benefited from a better setup and in all likelihood enjoyed a

higher level of profitability. Because many of the multiple entities were set up to minimize taxes, the farming operation likely forfeited long term profitability.

Implications for Data Collection

According to the Agricultural Resources Management Survey (ARMS) (2009), "For ARMS, an unreasonable respondent burden would result if operators were asked to report for each farm with which they were associated. Therefore, only one operation of the operator's multiple operations is selected and asked to report." Thus, with multiple entity operations such as Super Farm 1 or 2, only one of the operations may be surveyed. Given the arrangements among the entities of a super farm, there are implications regarding data collection on one of the sub-entities. For example, transfer pricing among entities may not be reflective of market value due to the objectives of the super farm. In addition, items regarding family living could also be difficult to capture given some of the complexity of the operations.

However, to adequately capture the entire farming structure, the costs in terms of respondent burden and expertise necessary to put the entire super farm analysis together for data analysis would be high and may not be appropriate given the objectives of the ARMS survey. However, to truly have an understanding of the farm management decision making process, the collection of the multiple entities into the true economic agent is necessary. In addition, for the economic agent to make sound decisions regarding the firm's overall objectives, an analysis of the "super farm" is necessary along with the analysis of each of the sub-entities.

As the production agriculture system continues to consolidate, farm structures will continue to become more complex. An important caveat is that it is easier to create entities than to end them and potential negative ramifications that could develop as policies and laws change must be analyzed. Certainly the super farm concept employed by the Kansas Farm Management

Associations may be one approach to more accurately understand the financial situation of the production agriculture sector. However, the costs incurred to develop that understanding will not be small.

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