Crying over Spilt Milk

- a cause map analysis of milk dumping in the Shijiazhuang region Spring 2004 -

鸡犬之声相闻，老死不相往来

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0 Introduction
This paper has been written as a contribution to the workshop 'Modern Dairy Production and Research,' Zhengzhou, Henan, China, October 8-9. When I was invited to participate, in my capacity as a scholar and consultant combining Chinese studies with organisation theory, I started looking for a suitable theme supplement to this mainly technical and partly commercial workshop. Although the incident itself was a tragedy, the dumping of milk that shocked China during the late Spring of 2004 immediately struck me as an excellent case to analyse the entire chain of the Chinese dairy industry from an organising perspective. I have selected cause map analysis as a method to expose the different interpretations of the incident by different groups of stakeholders. An analysis of those differences can provide insight in the degree of interaction between those stakeholders and how lack of such interaction has been a major factor in its escalation.

1 Events, incidents and causalities
The paradigm from which this paper has been written is Social Integration theory. In this paradigm actors and their ongoing social interaction are regarded as the only organisational reality that can be observed.
If we assume that human actors' actions are determined by the ways they make sense of the world and their place in that world, than methods to gain insight in those sensemaking processes are of the utmost importance for understanding actions and designing intervention strategies for change. If we further assume that people do not make sense as individuals, but rather through social interaction with other people, a picture is gradually emerging of groups of people who, through frequent social interaction about a specific topic, share a certain perception of that topic. In more general terms, we can discern social-cognitive structures consisting of a social element, the actors involved and their ongoing social interaction, and a cognitive element comprising the shared perception of the world, ways 'how we do things,' symbols, typical language, etc. (see Peverelli (2000) for an introduction of the theoretical framework used in this paper).

Social cognitive structures

| Social element	Cognitive element
People and their	Rules how to do things
Ongoing social interaction	Shared world outlook
	Symbols
	Typical language, etc.

The cognitive element is constructed by the social element

Different such groups may develop different perceptions. Whenever people belonging to different groups try to communicate about that topic, they may experience difficulties caused by their diverse perceptions. They may, e.g., find it difficult to reach an agreement on measures to solve a certain problem, as different perceptions of the nature of the problem will lead to different, possibly conflicting, solutions. Membership of a social-cognitive structure by an actor is referred to as inclusion. Actors are always members of a number of such structures. During social interaction, actors can access cognitive elements of other inclusions, which can enrich the interaction and even facilitate the creation of new social-cognitive structures.

One way of understanding sensemaking processes is cause map analysis. The concept of cause map analysis in organisation research has been introduced by Karl Weick (Weick, 1979: 65 - 88) and further worked out by Weick and Bougon (Weick & Bougon, 1986) . Useful applications can be found in Hodgkinson & Sparrow (2002: 247 ff.) and (Tegarden e.a., 2003). People understand the world in terms of events and perceive certain events as being caused by other events . Events can be tentatively defined as umbrella terms for a whole set of data that strike a human observer as closely related. To give an example: the regular flow of traffic on a street is not an event. However, when two cars on that street collide, it is regarded as an event. The event begins with the two care moving on the street. Then one car, or both, behaves in a non-regular way and collides with the other car. The term 'collision' stands for the activities described in the previous sentence, but also includes the vision of dented cars, possible injuries of people in the cars, etc. A certain observer of that particular collision may distinguish another event: heavy rain. Rainy weather is perceived as less regular than non-rainy weather, therefor rain, in particular heave rain, is regarded as an event; it stands out. Our observer may share his/her observations with other bystanders and during that social interaction, they may for a group of people sharing the belief that the event of the collision was caused by the event of the heavy rain.

| Heavy rain | ⟶ | collision |

The collision was caused by heavy rain
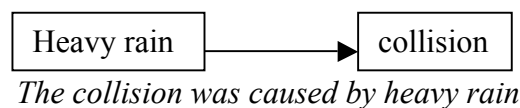
However, another group of bystanders may arrive at a different conclusion. On person in the group may believe to have seen that one of the drivers was making a mobile phone call without using a hands free set. That person may convince others, thus forming a group of people sharing the belief that the mobile phone call event was the cause of the collision.

| Driver made mobile phone call | ⟶ | collision |

The collision was caused by heavy rain
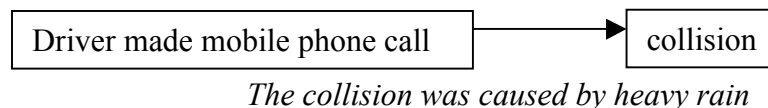
In the framework of this paper, I will refer to the set perceived causal relations between events shared by a group of people as their cause map. Apart from events, such cause maps can also contain conditions. For example, my personal cause map includes a causal relation between my age and my inability to run a marathon:

| Advancing age | ⟶ | Unable to run a marathon |
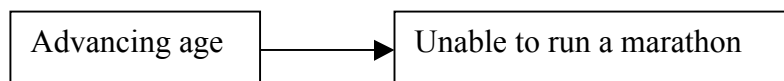
Cause map analysis is then a method to reconstruct the different cause maps to different groups of people involved in a certain subject and consequently observe and interpret the differences between them. Such an analysis will enable us to understand the cognitive obstacles people experience in trying to communicate about that subject and draw up interventions to facilitate for removing the obstacles.

1. The incident: dumping milk

Dairy has been booming business in China for a couple of years and the supply of raw milk is therefore an ongoing problem. There never is enough of it. However, in the Spring of 2004 a peculiar sight could be observed in some regions in China: farmers dumping good milk in ditches, or selling it as fodder of fertiliser. Shocking pictures of farmers emptying large bins of milk appeared in the national media.

This phenomenon has taken place in a few regions in China. To restrict the size of this paper, I will concentrate here on one region: Shijiazhuang, the capital of Hebei province. This choice of region is motivated by the fact that the problem was most severe in the Shijiazhuang region, while Shijiazhuang ranks among China's main dairy belts and is the home region of one of the top 10 dairy companies: Sanlu. Shijiazhuang was therefore the focus of the media coverage of the milk dumping problem. Moreover, the Shijiazhuang region is quite close to the Zhengzhou region, the focus region of this workshop and Sanlu owns 50% of Zhengzhou's main dairy company: Huahuaniu. Problems in Shijiazhuang could therefore affect the dairy industry of Zhengzhou as well.

The reader would now expect me to present a synopsis of 'what happened.' However, the main aim of this paper is to determine the cause maps of various groups of people involved in this problem. It is imperative for a proper cause map analysis that the researcher does not let his own perception of causal relations between various events interfere with his observations.

I will therefore present a list of the main events related to the problem and refrain from telling the story.

> *Fuyang*
> Early Spring 2004 witnessed a dramatic case of food poisoning among babies in Fuyang (Anhui province), even leading to a number of deaths, caused by contaminated milk powder.
>
> *Lower confidence in domestic dairy products*
> The demand for domestic dairy products in general and milk powder (infant formulae) in particular decrease sharply.
>
> *Lower production*
> Many dairy companies lowered or even stopped production.
>
> *Stricter purchasing specifications*
> Dairy companies adopting stricter quality specifications for purchasing raw milk.
>
> *Selling less milk*
> Farmers sold less milk
>
> *Dumping milk*
> Many farmers dumped milk that they were unable to sell.

This is only a small set of the various events found in the cause maps that will be described later in this paper. However, these examples will suffice to show how a story or of flow of events can be broken down in individual events.

2. Methodology

The most accurate way to determine cause maps is to perform interviews with a sufficient number of actors involved. However, for this paper I have restricted the research a analysing a corpus of texts from a broad range of Chinese media covering the dumping of milk in the Shijiazhuang region. The bulk of those texts were published during the second half of May and the first half of June, 2004.
On the social side, I have distinguished five groups of people, that were either directly involved in the incident, or were influential parties in the social-cognitive environment in which the incident took place:

-   farmers;
-   administrative organisations;
-   dairy companies;
-   academic organisations;
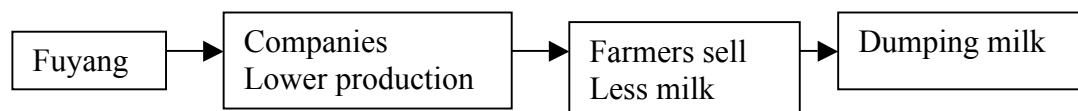-   public organisations (e.g. industrial organisations).

For each category I have selected a specific sub-group with sufficient coverage in the media to enable the extraction of a more or less complete cause map:

-   farmers: farmers from Xingtang County of Shijiazhuang Municipality;
-   administrative organisations: Shijiazhuang Bureau of Animal Husbandry & Fishery, a municipal department;
-   dairy companies: Sanlu Dairy Group, one of China's top 10 dairy companies, which has its corporate HQ in Shijiazhuang;
-   academic organisations: Hebei Academy of Social Sciences Rural Economy Research Institute;
-   public organisations: Hebei Dairy Association.

I will try to analyse the following piece of text as a concrete example:

'The Fuyang incident made the dairy companies lower their production and therefore the farmers sold less raw milk. The farmers had no alternative but to dump the milk.'

In this text, the Fuyang incident is believed to be the cause of the fact that the dairy companies lowered their production. This in turn is said to have caused the farmers to sell less milk. This then caused the farmers to dump the (unsold) milk. This can be regarded as one causal flow of events:

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┌─────────┐    ┌──────────────┐    ┌─────────────┐    ┌──────────────┐
│ Fuyang  │──▶ │ Companies    │──▶ │ Farmers sell│──▶ │ Dumping milk │
│         │    │ Lower produc-│    │ Less milk   │    │              │
└─────────┘    │ tion         │    └─────────────┘    └──────────────┘
               └──────────────┘
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The researcher should heed not to mistake a compound statement for a single one. The sentence 'The farmers had no alternative (*wu fa* in Chinese) but to dump the milk,' is a compound statement. It states that the fact that the farmers lacked an alternative way to deal with the milk caused the dumping of it. In other words, there is a second causal flow of events:

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┌──────────────┐    ┌──────────────┐
│ Farmers had  │──▶ │ Dumping milk │
│ no alternative│   │              │
└──────────────┘    └──────────────┘
```
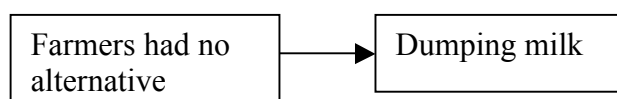
As the entire example text was an utterance of one person or social-cognitive group of persons, we can then combine these two flows in one cause map:
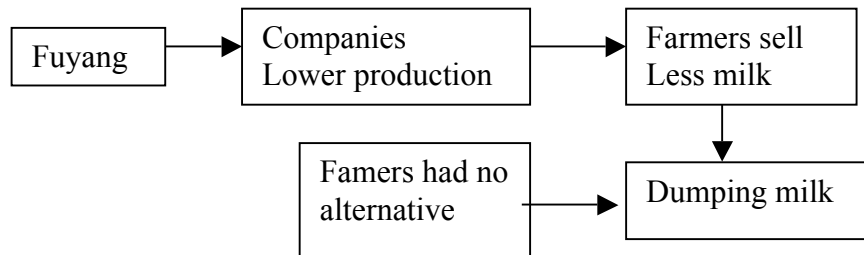
We can now start interpreting this cause map. We can, e.g., regard the various flows leading to our core event, the dumping of milk, as pertaining to different social-cognitive contexts, in which actors make sense of the world in different ways, leading to different actions, decisions, etc.

Such a context is cognate, though not entirely similar, to the notion of system as introduced in Mr. Schiere's contribution to the workshop. The above simple cause map shows one social system consisting of two types of actors: farmers and dairy companies. The farmers produce milk, which they sell to the companies. This system works as long as the companies buy all the milk produced by the farmers. As soon as the companies lower their purchasing, the farmers are stuck with part of the milk, for which the have no alternative sales channels. This shows another conclusion we can draw from such cause maps: the power relation between groups of actors. In our example the companies stand out as more powerful than the farmers.

The number of causes leading to a certain event can be regarded as an indication of the relative importance of that event. In the above simple cause map, Dumping Milk is a more prominent event that Farmers Sell Less Milk, because it is the combined result of two streams of causality.

Cause maps may also lead us to solutions for avoiding incidents like this in the future. One solution could be to alter the way dairy companies interact with the farmers. However, we may also conceive alternative ways to handle the milk apart from selling it to dairy companies.
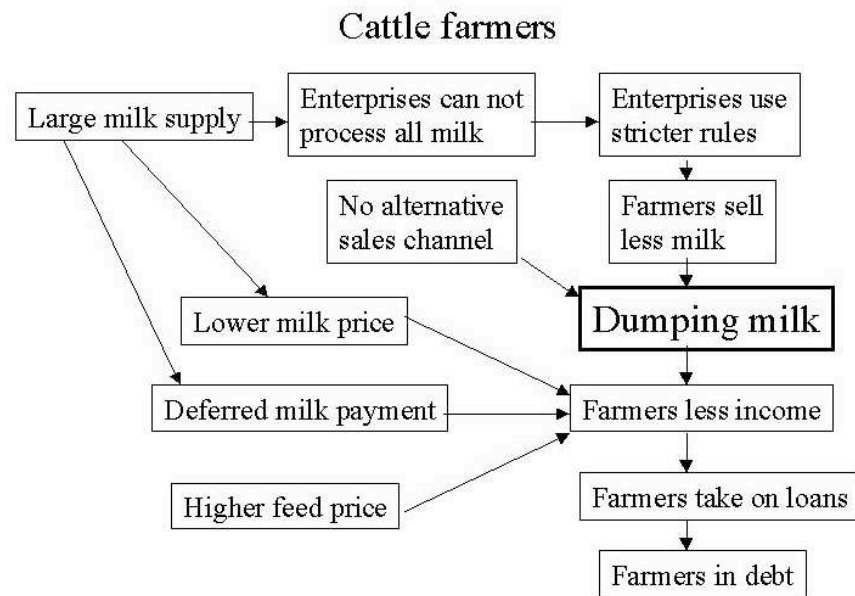
Finally, we can compare the cause maps of different groups of stakeholders. This can shed light on the ways the various stakeholders interact with other groups. When the cause maps of stakeholder group A is closer to that of B than to that of C, this can be regarded as an indication that group A interacts more with group B than with group C.

It can not be emphasised enough, that cause maps do not indicate absolute causal relations between events, but are representations of what one actor or group of actors perceive as causal relations. Other actors can construct different cause maps including the same events and conditions. All cause maps are correct within their own social-cognitive context; there is no such thing as THE real correct cause map.

3. The cause maps and analyses

There are a number of perspectives from which cause maps like these can be analysed. In view of the limited time, I will restrict my analysis to a summary of the

most salient aspects of each cause map and only compare the way farmers are incorporated in the various maps.

Cattle farmers

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┌──────────────────┐     ┌──────────────────┐     ┌──────────────────┐
│ Large milk supply│────▶│ Enterprises can  │────▶│ Enterprises use  │
└──────────────────┘     │ not process all  │     │ stricter rules   │
                         │ milk             │     └──────────────────┘
                         └──────────────────┘              │
                              ┌──────────────────┐         ▼
                              │ No alternative   │   ┌──────────────────┐
                              │ sales channel    │   │ Farmers sell     │
                              └──────────────────┘   │ less milk        │
                                                     └──────────────────┘
              ┌──────────────────┐                           │
              │ Lower milk price │              ╔══════════════════╗
              └──────────────────┘              ║  Dumping milk    ║
                                                ╚══════════════════╝
       ┌──────────────────────┐                          │
       │ Deferred milk payment│──────▶┌──────────────────────┐
       └──────────────────────┘       │ Farmers less income  │
                                      └──────────────────────┘
       ┌──────────────────┐                      │
       │ Higher feed price │                     ▼
       └──────────────────┘          ┌──────────────────────┐
                                     │ Farmers take on loans│
                                     └──────────────────────┘
                                                 │
                                                 ▼
                                       ┌──────────────────┐
                                       │ Farmers in debt  │
                                       └──────────────────┘
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Farmers

This cause map is extremely self-centred. The only party outside the own group mentioned are the enterprises. The farmers' world seems to mainly consist of one social system of farmers whose main activity is raising cows to produce milk and enterprises who purchase the milk to process it into dairy products.
The farmers seem to perceive themselves as passive victims of circumstances outside their own control. For example, the dairy companies buy milk from the farmers rather than that the farmers sell the milk to the companies. The farmers claim to lack alternative sales channels, but do not show any initiative to find such alternatives.
This is the only cause map in this study which takes account of the consequences of dumping milk, although these consequences once more are centred around the farmers. Moreover, the fact that no less than four causes lead to the event Farmers Less Income, indicates that this event is perceived as more important than Dumping Milk, which is only caused by two events.

Hebei Milk Association
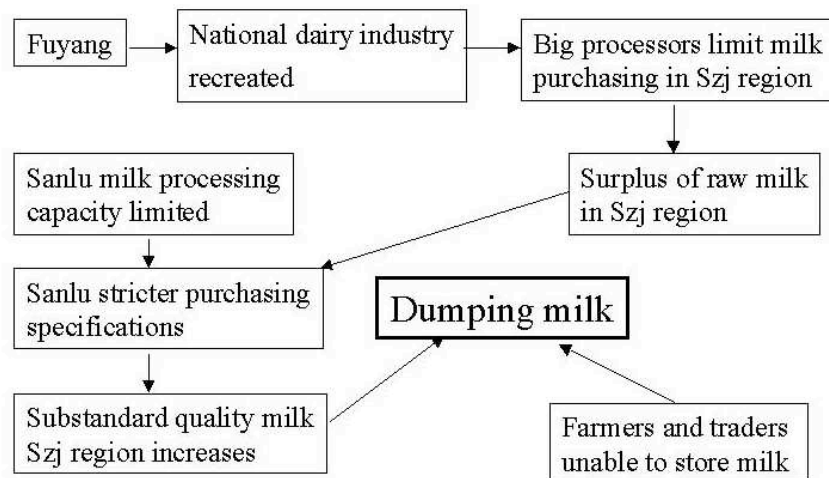
Hebei Milk Association

This is a rather factual cause map, suiting a practical sector association. Quality is perceived as a stretchable concept. In the Shijiazhuang region the specifications of good quality milk are set by Sanlu. Sanlu appears to be perceived as the default milk processor in the region, as the company is specifically mentioned, while all other dairy processors are referred to as a nameless group.

From a perspective of social systems, the 'big processors' and 'Sanlu' seem to be perceived as separate systems. Although the big processors handle the raw milk in the same way as Sanlu, the Hebei Milk Association apparently applies a rule of regional chauvinism, favouring Sanlu with a special position as THE local dairy company. However, Sanlu's stricter purchasing policy is not ascribed to the company's concern for quality, but to its limited processing capacity. It is here that the big-processors system and the Sanlu system are linked. When the big processors limit the volume of milk purchased in the Shijiazhuang region, Sanlu is unable to process all that excess milk thus becoming available. Sanlu then reacts by increasing its purchasing specifications, which creates a certain volume of rejected milk.

Farmers do not play a major role in this cause map. Farmers are again perceived as passive victims of circumstances beyond their control. Farmers and the milk traders (self employed people sometimes acting as intermediates between farmers and dairy companies) are depicted as a social system producing milk and selling it to the dairy companies. When they are unable to sell all milk produced, the lack of storage forces them to dump the milk.

Shijiazhuang Bureau of Animal Husbandry & Fishery
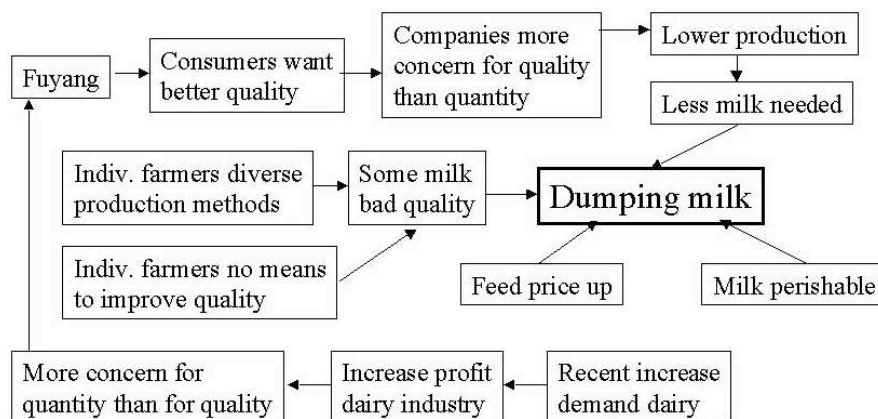
Shijiazhuang Bureau of Animal Husbandry & Fishery

This is a rather broad cause map, including a wide number of stakeholders. A government agency needs to consider all parties involved. However, the 'government' is not included, which indicates a lack of self reflection.

This is the only cause map to take the events contributing to the Fuyang incident into account. The incident is ascribed to the greed of the dairy industry to maximise income on the expense of quality.

This cause maps shows a long causal chain of events, in which the lack of concern for quality leads to the Fuyang incident, which then causes more concern for quality, which in turn leads to a decrease in the purchasing of milk by the dairy companies. In terms of social systems, it is a system of dairy companies in their interaction with consumers. The companies' greed leads to a serious incident decreasing consumer trust in the companies. The companies are reacting to this with greater concern for quality.

It is obvious that Dumping Milk was a major issue for the Bureau at that moment, as it is caused by four events.

This cause map does not construct a very positive picture of the cattle farmers, in particular the individual household farmers. They are placed in a separate system, apart from the dairy companies. The Chinese idiom stating that 'individual farmers employ diverse production methods' is euphemistic, implying that most of those methods do not comply with good cattle raising and milk handling practice.

Individual farmers are further said to lack the means to improve the quality of the raw milk. Moreover, the event that feed prices are rising is mentioned as a direct cause for the dumping of milk. It is not brought up as a cause of, e.g., financial problems of farmers. Holders of this cause map seem to prefer farmers to work collectively, using specific unified production methods. As this is an influential government agency, this cause map should be considered seriously by the farmers in the Shijiazhuang region.
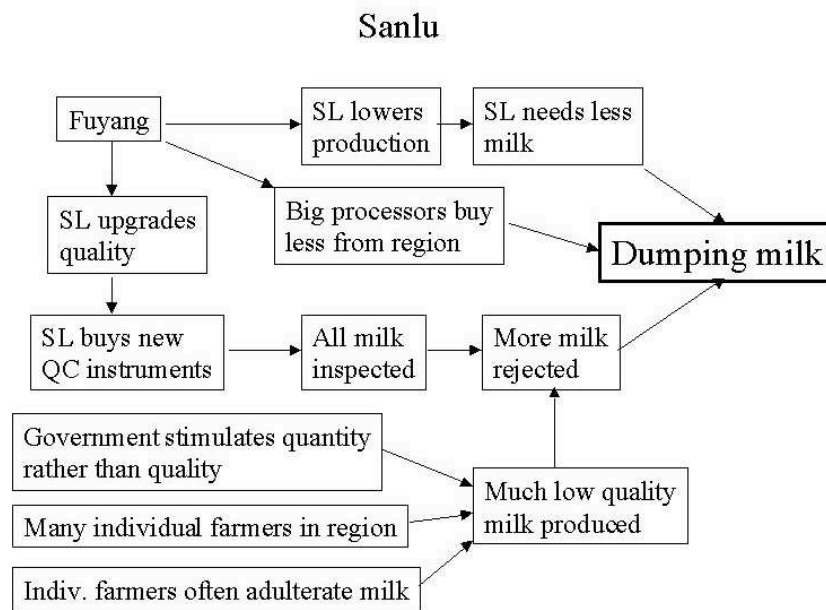
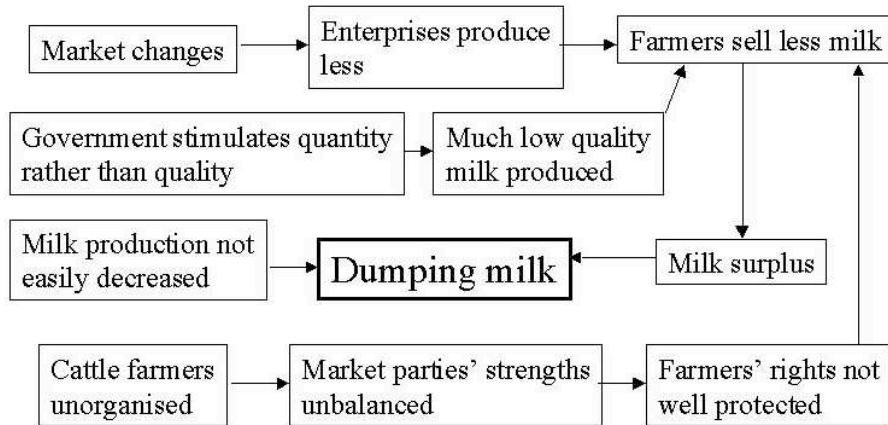## Sanlu

Sanlu Dairy Group

Sanlu spokespeople seem to be preoccupied with their own organisation. It is the centre of most flows of causality in the cause map.

Farmers, again in particular the individual households, are brought up as contributing to the milk dumping incident. Of the five cause maps analysed in this paper, Sanlu's map most directly states that individual farmers often adulterate milk. However, the government is also bestowed a negative role as it is perceived as stimulating quantity rather than quality. However, this lack of attention to quality of the government is perceived as affecting the behaviour of some individual farmers, but as an influence on the decision making at Sanlu.

Dumping Milk and Much Low Quality Milk Produced are events of equal importance. Both are caused by three events in this map. Moreover Low Quality comes before Dumping Milk in the causal chain of events, which indicates that it is perceived as the more basic of the two.

In terms of social systems, Sanlu is depicted as a system of its own in this cause map. The big processors constitute another system. Although Sanlu proudly profiles itself as one China's top dairy companies, in this cause map, the company separates itself from the other top companies. Regional chauvinism is doubtless at work again here.

Hebei Academy of Social Sciences
Rural Economy Research Institute

| Market changes | → | Enterprises produce less | → | Farmers sell less milk |

| Government stimulates quantity rather than quality | → | Much low quality milk produced |

| Milk production not easily decreased | → | **Dumping milk** | ← | Milk surplus |

| Cattle farmers unorganised | → | Market parties' strengths unbalanced | → | Farmers' rights not well protected |

Hebei Academy of Social Sciences Rural Economy Research Institute

The complexity of this cause map reflects the academic character of its holder. It includes virtually all parties involved.

The Fuyang incident is not given a prominent role; it is part of the broad event 'changes in the market.' This is the only cause map to include the fact that milk production can not be simply lowered or shut down.

Farmers Sell Less Milk is a central event, caused by three events. Dumping Milk is only caused by two. Moreover, the former comes earlier in the causal chain of events, making it a more basic issue.

Farmers are not completely blamed for dumping of milk. The government has also contributed. The typical feature of this cause map is that the low degree of organisation of the farmers is mentioned as one of the causes of the problems. This is not a completely passive picture of the farmers. The farmers are regarded as being able to organise themselves; they just have to do so.

The social systems as perceived in this cause maps are also more complex than in the other cause maps considered in this study. Market parties, dairy companies and farmers are part of one causal flow. The government and the farmers constitute another flow and those two flows converge in the event of the farmers selling less milk. The farmers are regarded as one of the market parties, who can increase their power in the interaction with other parties by organising themselves.

4 Conclusions

There are several of ways in which we can analyse these cause maps. One trait that immediately stands out as common to virtually all the cause maps is that none of the parties directly involved seems to interpret its own role in the incident as negative:

- the cattle farmers blame the incident to the haphazard way in which the dairy companies adapt their purchasing criteria to their own needs;

- the Bureau elaborates on the market, the farmers and the industry, but fails to refer to the role of the government;

- Sanlu meticuously describes its concern for quality, while also referring to events in the market, like the Fuyang incident, but blames the government and the (individual) farmers for the dumping incident.

One way to compare cause maps is to select a number of key items (events) and make an inventory of the groups of actors whose cause maps include those items. For example, when we look for cause maps that include remarks on the role of the government, we find that Sanlu and the Academy mention the item 'the government stimulates quantity rather than quality' and that both agree that this has caused an increase of the production of low quality milk.

Another conspicuous item is the negative role ascribed to individual farmers. Both Sanlu and the Bureau share a causal relation between the high number of individual farmers in the region and the high ratio of low quality milk. The Bureau also notes the excessive concern for quantity, but ascribes it to the dairy industry, rather than the government.

The lack of self reference in these cause maps, combined with the low level of similarity between any of them, seems to point at a serious lack of interaction between the various groups of people involved in the incident. This could very well be the major cause for the incident to occur and develop so quickly.

During the year before the dumping incident, the media abounded with parlance on the close co-operation between the dairy companies, farmers and government to make the Shijiazhuang region into one of China's major dairy belts. However, the cause maps, based on premeditated statements to reporters, reveal quite the opposite. The farmers accuse the dairy companies of using purchasing specifications to increase or decrease the volume of milk purchased according to the companies' own interest. Sanlu, on the other hand, praises itself for its concern for quality and puts part of the blame for the incident on the farmers. The Bureau, the government agency most directly responsible for the incident, blames the companies and the farmers. This evident lack of interaction does not only clarify the causes of the incident, but also indicates that similar incidents can easily re-occur in the future, unless serious interventions are initiated to create an environment that allows for more interaction.

A spokesperson of the Academy urges the cattle farmers to organise themselves in a kind of association. In this way they could increase their bargaining power in obtaining better conditions from the dairy companies. Although self organising is always a positive action, by itself this particular formation of a dairy cattle farmers' association may not suffice to solve revealed by the cause maps. An environment has to be created to facilitate regular interaction between the various parties involved. We could give it the provisional name 'Shijiazhuang Dairy Board.' Such an environment

would enable parties to exchange one another's perceptions and would allow them to quickly form temporary coalitions for specific purposes.

The goal would not be to let these separate social-cognitive structures converge into one large structure. Structures like the five examples in this paper are tightly coupled (Weick, 1979, 110-112) structures that tend to last for a prolonged period of time. An increase of interaction between these parties could create a larger structure (the proposed Shijiazhuang Dairy Board), which would be more loosely coupled, but could still have a considerable viability. Within that new environment parties, including other parties than the five mentioned in this paper, should be allowed to freely form alliances based on share perceptions of a specific problem. Most of these alliances with disappear with the disappearance of the (perceived) problem, but some of them may prove to be attractive enough to survive.
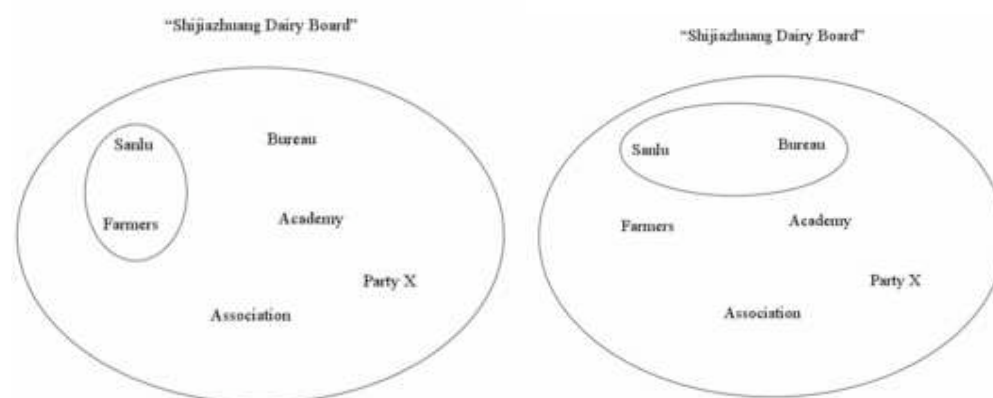
Examples of possible temporary coalitions

In such an environment events leading to major incidents like the dumping of milk should be spotted soon enough to avoid an escalation as we have witnessed in May 2004. A number of the significant problems mentioned by various parties in the interviews, e.g., clear specifications for quality control, price control (of raw milk, feed, etc.), properly reacting to signals from consumers, structural technical problems (e.g., storage of raw milk), etc., can never be solved adequately, as long as the gaps between the cause maps of the various stakeholders remain as wide as indicated by this study.

I sincerely hope that this brief paper has sufficiently shown that for bringing the Chinese dairy industry to a higher level, it is insufficient to only look into the technical and commerical aspects, while slighting the organising perspective. Farmers, traders, managers, adminstrators, etc., need to be more of aware of how they perceive the world, their own role in that world and their relations with others. Systems thinking can guide them in the right direction, but may not powerful enough to guide them all the way.

References
The cause maps in this paper have been extracted from a corpus of news items reporting on the dumping of milk in the Shijiazhuang that appeared in the Chinese media during the second half of May and the first half of June, 2004.

Hodgkinson, G.P. & P.R. Sparrow, 2002, *The Competent Organization*, Open
    University Press, Buckingham-Philadelphia.
Peverelli, P.J., 2002, *Cognitive Space – a Social-Cognitive Approach to Sino-Foreign
    Co-operations*, Eburon, Delft.

Tegarden, D.P., L.F. Tegarden & S.D. Sheetz, 2003, Knowledge Management Technology for Revealing Cognitive Diversity within a Management Team, *Proceedings of the 36th Hawaii International Conference on System Sciences*.

Weick, K.E., 1979, *The social psychology of organizing*, McGraw Hill

Weick, K.E. and Bougon, M., 1986. Organizations as Cognitive Maps: Charting ways to success and failure. In: H.P. Sims, Jr., D.A. Gioia and Associates (Eds.) *The Thinking Organization: Dynamics of organizational social cognition*, Jossey-Bass, San Francisco, 102-133.