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### **FOOD SAFETY IN FRANCE, FROM MAD COW DISEASE TO AVIAN FLU**

法国的食品安全——从疯牛病到禽流感

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The Chinese Food Safety Law, that was voted in February 2009 and comes into effect in June, gives the Minister of Health a greater role in the management of food safety. It creates a Food Safety Commission to coordinate the action of previous governmental agencies such as the Minister of Agriculture or the Administration for Quality Surveillance, Inspection and Quarantine (AQSIQ). It follows a series of crises revealing flaws in the Chinese food safety chain, such as the tainted milk scandal in the end of 2008 causing the intoxication of 300 000 babies by melamine (Keck 2009).

This law could be adequately compared to the Health Safety Law (Loi de Sécurité Sanitaire) that was passed in 1998 in France, which followed a similar crisis in the management of the blood donation chain : the scandal of contaminated blood. This law created agencies under the supervision of the Minister of Health to introduce a culture of risk assessment in the management of food and drug. However, since I am not a jurist but an anthropologist, I will not dwell into the comparison of these two laws. Rather, I would like to show how this tension between the Minister of Health and other administrations in the management of food appeared in France. I would like to raise the question : what is the role of food safety crises in the introduction of a new point of view in the management of the food chain ? Why is it necessary to have a public scandal to transform the rules of food safety ? This question is at the crossroads of the anthropology of food and the sociology of public crises.

I will raise this question by focusing on Avian Flu, which is my current topic of research both in France and in China. The fight against pandemic flu has been a global concern since 1997, when the first cases of H5N1 were declared on humans and birds in Hong Kong, and 1.5 million chicken were consequently killed. It has now become a major health issue, since the World Health Organization has raised its level of alert to pandemic after the discovery in April 2009 of a new H1N1 virus of Swine origin in Mexico, a highly contagious flu virus that passed from birds to pigs before going from humans to humans. But for many years it has remained a risk for food safety, because all those who were working with live poultry were at risk of catching the deadly virus, jumping directly from birds to humans. In China the crisis that transformed Avian Flu from a food safety risk to a health risk was SARS, when the coronavirus causing 8000 persons infected and 800 dead was found to pass from bats to wild civets in South China markets (Abraham 2007). But in France it was the Mad Cow Disease that revealed that the transformations of the food industry produced new risks for the consumer, when the new variant of a Creutzfeldt-Jakob disease was found to have passed from sheep to cows to humans via animal foodstuff, killing tens of humans and thousands of cows (millions of them were culled to stop the contamination). The narrative I will give offers a compared analysis of problems that affect Europe as well as China.

## **Object : the Meaning of Animal Diseases in Food Safety Crises**

I will rely on two years of fieldwork at the French Food Safety Agency, during which I observed several expert committees and conducted interviews with scientists in the expert committees and in the labs. The AFSSA was created in 1998 after the Mad Cow crisis to prevent the introduction of infectious agents into the food chain. Following the precautionary principle, it assesses the risks of food products before they are commercialized, and has a mission of ensuring Public Health. As an ethnographer, I was surprised that Avian Influenza came to be problematized as a food safety issue, since it is clear that cooking the chickens is enough to kill the virus. The official reason is that when the news of a virus transmitted from birds to men came through the media after the first case of H5N1 in February 2005, the consumption of poultry fell by 20%, and the AFSSA, among other institutions such as the DIV (Direction d'Information sur les Viandes), had to reassure the public saying there was no risk in eating chicken. The Bird Flu crisis, as it came to be known, was very analogous to the Mad Cow crisis in that it provoked similar reactions of panic among consumers. By talking about « Avian Influenza » (AI) rather than « bird flu », or BSE (Bovine Spongiform Encephalopathy) rather than « Mad Cow Disease », the AFSSA had to answer sanitary crises with clear and scientifically grounded information on the food production. It covered the food chain « from the farm to the fork » (« de la fourche à la fourchette »), since the risks for farmers who deal with living poultry are as important as the risks for consumers who eat dead chicken. In some way, this entrance of Avian Influenza into the domain of the AFSSA was a sign of its success : it had become so legitimate for food safety issues that it could integrate sanitary problems situated at the limits of its field.

But there was another reason why the AFSSA was mobilized on Avian Influenza: as an animal disease, it could be addressed either by veterinarians or by physicians, depending whether the virus was considered from the perspective of its consequences for animals or from the perspective of its impact on humans. In the case of Mad Cow Disease, the collaboration between veterinarians and physicians was necessary, as the BSE agent had already passed from animals to humans. But in the case of Avian Influenza, this collaboration is more difficult, as the H5N1 virus has not mutated (yet ?) to an inter-human form, while plans for a pandemic are already drawn by health officials. The success of the AFSSA in integrating Bird Flu is also a sign of its fragility : it reveals an internal tension in its Public Health mission whether it concerns animals or humans. I discovered that this controversy between veterinarians and physicians on animal diseases profoundly structures the field of food safety.

Why have animal diseases, among all food safety issues, produced the most intense critical activity ? My contention is that animal diseases introduce into food safety assesment a tension between two contradictory representations : the animal as a good potential meat and the animal

as a dangerous living being. English has interesting distinctions to express this contradiction: beef and cow, veal and calf, mutton and sheep, chicken and poultry. Experts have to translate this contradiction in their own practices, and they produce intermediary terms to resolve it: « public health » or « risk » take different meanings when they are considered in animal life and human life. The contradiction between two extreme poles of human experience is what gives food safety crises their significance. The language of risk works ambiguously because it offers provisional compromises to this contradiction.

This logical contradiction can be expressed in a more historical way : the domestication of animals has introduced at the same time a huge stock of food and a new site for viruses. The animals we eat are also those we should be mostly scared of, as the techniques of domestication imply new possibilities of mutation and replication for infectious agents. Emerging diseases come from the « Livestock Revolution » by which we produce and transport animals in an industrial manner (Greger 2006). Mad Cow Disease and Bird Flu have shown that techniques of animal feeding, transportation and slaughter bear new risks of transmission for emerging diseases. As historian William Mc Neill has observed : « on the time scale of world history, we should view the 'domestication' of epidemic diseases that occurred between 1300 and 1700 as a fundamental breakthrough, directly resulting from the two great transportation revolutions of that age – one by land, initiated by the Mongols, and one by sea, initiated by the Europeans. » (Mc Neill, 1976, 198) More recently, physiologist Jared Diamond has talked about the « lethal gift of Livestock », and argued that the difference between Amerindians and Europeans was not that they had military power but that they became used to the viruses they brought with their domesticated animals, inventing vaccines as a counter-gift to the gift of meat and viruses (Diamond 1997). Far from being natural, animal diseases are related to the way society integrates animals as part of their milieu ; they tend to make food consumption a problematic act that forces to redraw the boundaries between humans and animals within the milieu in which they interact.

It would be insufficient, however, to content oneself with a large historical narrative, such as that of Mac Neill or Diamond. Rather, it is necessary to observe in each society how the alimentary act draws in a problematic way the relations between animals and humans. Philippe Descola recently asserted that once we abandon the nature/culture divide as a broad anthropological category, it remains an ethnographic task to show how interiorities and physicalities are linked together in various contexts, depending on ontologies that articulate differently the problems raised by basic attitudes such as eating animals. Thus, for animist societies that posit animals as sharing with humans the same interiority, food consumption becomes a problem because animals have to be « decontaminated » of their subjectivity : « There is always a doubt that remains : under the flesh of the animal or the plant that I eat, what

subsists of its human subjectivity ? What guarantee do I have that I do not (or not any more) eat a subject that is like me ? » (Descola 2005, 391) Starting from very different assumptions, that Descola would call « naturalistic », food safety experts have to answer the same questions : if the animals we have domesticated share with us infectious agents, what guarantee do we have that we are not killed by the living forms we have produced ourselves ?

My hypothesis is that animal diseases such as Mad Cow Disease or Bird Flu reveal anthropological tensions in the alimentary act, which appear as logical contradictions during food safety crises. Relying on the ethnography of the French Food Safety Agency, I will show how experts deal with these contradictions in a way that is specific to the French context, but that might appear as analogous to other treatments of the same tension in other contexts. I assume therefore that the work of expertise is not radically different from the daily cognitive work of those who have to deal with animal diseases (hunters, breeders): only it is more formal, which makes the study of these contradictions easier.

### **Method : an Anthropology of Contemporary Critique on Human/Animal Relationships**

This hypothesis articulates three different theoretical lines. First, it belongs to an anthropology of the contemporary, attentive to the assemblages of discourses, practices, techniques, institutions that constitute the present through a reconfiguration of older elements (Rabinow 1999, 2003). It takes animal diseases as a site of curiosity and interest in which significant transformations take place for the apparatuses that constitute Public Health as a stabilized domain. Following Michel Foucault, it raises the question of the biopolitical significance of these diseases, that is, the change they introduce into power relationships, between the sovereign power and the power of expertise. In the case of BSE or AI, the dilemma between culling animals and vaccinating them, which has both moral and economic aspects, raises in a specific way the question of the articulation between sovereignty and biopolitics, between the power to « make die and let live » and the power to « let die and make live » - what Foucault called « the acceptability of putting to death in a biopolitical regime » (Foucault 1997).

Second, it relies on an ethnology of human/animal relationships. It supposes that the separation between humans and animals is not a fixed and pre-given frontier, but needs to be redrawn following certain ideals (such as Public Health) in various ways depending on specific contexts. It takes this separation as a logical contradiction that constitutes discourses in such a way that it cannot be addressed directly but only through the displacement of binary oppositions. Following Lévi-Strauss, it does not posit historical change as incompatible with logical analysis, but describes the transformations of these contradictions through immanent rules that give

intelligibility to an otherwise proliferating historical material (Keck 2004). It therefore takes the biopolitical as a space of tensions and contradictions, which can be analysed if they are linked to potentially universal oppositions, such as that between humans and non-humans (Keck 2006). I borrow from Claude Lévi-Strauss the notion of « transformation » that he applies to human/non-human relationships in Amerindian mythology, to apply it to the shift from one food safety crisis to another. Food safety crises can be compared because they share a general form, but this form is unstable because it relies on a structural tension in human experience, that is oriented in various ways depending on the contexts where it appears. Animal diseases are therefore a good site to observe how the term « biosecurity » articulates in a new way constitutive tensions of the bios.

Third, it takes part in a sociology of critique, that doesn't consider critique in a denunciatory mode as a privilege of the observer, but rather as an activity exercised by actors themselves (Boltanski and Thévenot 1990 ; Boltanski 1992). In the domain of food safety, experts all have an idea of Public Health as a good that needs to be pursued for itself (Dodier 2003). As they are asked to evaluate the quality of the food that circulates, they mix forms of assessment that depend on scientific criteria with forms of assessment that draw on other regimes of normativity, relying on much more « familiar » forms of evaluation (Thévenot 1997). They have different views of the good and different expert knowledges (compétences) depending on their position in the spectrum bounding animal health and human health. A sociology of critique is attentive to the ethical dimension of food safety in its plurality, and tries to describe the various ethos that enter in a productive tension on biopolitical issues. It therefore raises the problem of the contribution of social sciences to a critical understanding of the present, on which this article will conclude.

### **Tensions between Veterinarians and Physicians : from the Contaminated Blood Affair to Mad Cow Disease**

The French Food Safety Agency was created in 1998 on the site of a network of veterinary labs, the Centre National d'études vétérinaires et alimentaires (CNEVA). It created the Direction d'Evaluation des Risques Nutritionnels et Sanitaires (DERNS), mostly run by physicians, who resolutely oriented risk assessment toward the protection of the consumer, and added a new form of risk assessment through collective expertise to the older structure of surveillance by laboratories scattered on the territory<sup>2</sup>. Veterinary experts who used to work separately under the supervision of the Minister of Agriculture, now came to work collectively for the DERNS. The

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<sup>2</sup> When I arrived at the AFSSA, its director, Martin Hirsch, told me there was nothing interesting to see in the labs. Such a stance is highly provocative for an anthropologist of science looking for labs as the place where science is « in the making ». It shows that the type of scientific truths produced by expert committees was very different from that produced in the labs. I consequently did not observe labs but expert committees. However, I found within the different expert committees an opposition (between veterinarians and physicians) that in many respects displaces that between labs and expert committees (veterinarians defending the labs when their money is cut or their data overlooked). This paper is about this opposition, that I consider as structural for the field of animal diseases.

change from « vétérinaire et alimentaire » to « nutritionnel et sanitaire » was significant. Nutrition, a discipline endowed with little prestige in the academic world but a lot of impact on public opinion through scientific societies, was used as a way to reframe the sanitary conditions of food production in terms of its risks for the consumer.

This political decision was significant for the way in which food safety came to be problematized in France as a public health issue. Veterinarians were formerly in charge of food safety in the context of the formation of the French State: they were the representatives of the State all along the food chain, and had to respond every crisis that emerged over specific foods, such as milk or grapes (see Stanziani 2005). The French veterinary network of surveillance, constituted in the nineteenth century, is organized around four veterinary high schools run by the State (Maisons-Alfort, Lyon, Nantes, Toulouse). After a century of struggle against the empirical methods of breeders, veterinarians had finally earned the trust of the State, in the context of the rationalization of agriculture as one of the nation's main resources (Hubscher 1998). This relationship was destroyed by Mad Cow Disease. When it was revealed that a new variant of Creutzfeldt-Jakob disease had been transmitted through the consumption of beef, and when the first cases in Great Britain were linked to the reduction of the temperature of warming of meat and bone meals, the veterinary network of surveillance came under suspicion. Veterinarians were criticized on both sides: by breeders, because they revealed a disease whose economic consequences were huge and sanitary significance still dubious, and by the consumers, because they were accused, along with breeders, of having allowed an infectious agent to enter the food chain through an irresponsible use of modern technologies (see Chateauraynaud and Torny, 1999 : 316 sq.). True, meat and bone meals had been used since the beginning of the twentieth century as a zootechnical measure to increase the amount of protein fed to animals, while recycling the remains of animals and leftovers in slaughterhouses that would have been otherwise useless : it was a constitutive part of the modern agricultural contract. But when the infectious agents responsible for the Creutzfeldt-Jakob disease were discovered to pass through meat and bone meals and cause the degeneration of brain in animals and then in humans, public light was shed on this technical measure which was then denounced as having denatured cows by transforming them into cannibals (see Schwartz 2003). From the perspective of the veterinarians, Mad Cow Disease was both an intellectual challenge and a political nightmare. The dissemination of an animal disease was completely part of their domain, and they were called in the highest levels of the State to elucidate the enigma ; but the peculiar nature of the infectious agent, and the wave of criticism against the use of meat and bone meals, forced them to open their field of expertise to other actors, with which they were potentially in competition.

Indeed, the institutionalization of food safety through the creation of the AFSSA can be



described as a shift in the site of authority for surveillance and control of the food chain from veterinarians to physicians. Physicians had traditionally been in charge of food safety as the hygienic tradition brought under scrutiny the food for babies and old people (Murard and Zylberman 1996 ; Ferrières 2003) ; but they had left the first stages of the food chain to the veterinarians, and observed it only from its final stage. From the perspective of physicians, in the frame of the patient-doctor relationship, food is one of the constituents of the equilibrium of a person. From the perspective of veterinarians, it is the product of a food chain which implies animals and humans through breeders and distributors. Mad Cow Disease shifted the gaze of the physicians from the act of consumption to its material conditions of possibility. Consequently, the control of food safety was partly transferred from the Minister of Agriculture, working in close relation with breeders and veterinarians, to the Minister of Health, who imported into food safety concepts and practices coming from the drug industry.

Such a transfer was triggered by the professional trauma of the contaminated blood scandal. When, in the 1980's, it was revealed that HIV had been disseminated through the State-controlled system of blood transfusion to hemophilic patients, one of the core ideals of the medical profession was put into question. The French blood-transfusion system operated a shift from a patient-to-patient blood donation to a collective network of distribution that needed trust to be perpetuated. This trust derived from the model of the World War II Resistance, in which the donation of blood was voluntary, as opposed to the commercial use of blood by the collaborators of the Vichy State. The revelation of the presence of HIV in the blood-transfusion system had put the moral relationship between the State, physicians and patients into jeopardy, as it showed that the decisions to avoid this threat had not been taken for financial reasons (Morelle 1996, Dodier 2003). Mad Cow Disease then appeared as a new battlefield : restoring public health meant establishing a control over the food chain. If an infectious agent such as HIV had been allowed to enter the blood circuit because of a failure of the State, stopping the entrance of the prion into the food chain would reassert the authority of the State.

Thinking Mad Cow Disease in the line of the contaminated blood scandal resulted in a redefinition of Public Health, that introduced a potential conflict with animal health. In 1964, Charles Schwabe could write : « The practices of veterinary medicine and public health are based upon identical population concepts. The herd and the flock almost always have assumed a more important place in the veterinarian's thinking than had the individual animal. Similarly, in public health, the individual is not the patient but the community is. » (Schwabe 1964 : 4) In 1998, the object of public health was not any more the population but the individual at risk. Consequently, « viewing man with some objectivity as just another host species in the epidemiological pattern of any particular disease » (ibid.) was not any more sufficient as a Public Health rationality. The

life of a single individual became more important than the economic sustainability of the animal flock. Veterinarians and physicians, who had served the same ideal of Public Health, now came into conflict, because this ideal had been redefined by the two scandals, and become controversial. AFSSA was thus a battlefield on which veterinarians and physicians expressed their disagreements in the terms of risk assessment. Therefore, expertise in food safety can be described as a conflictual domain between two professions, the veterinarians and the physicians, who criticize each other through a projection onto the other of the original blame: physicians accusing the veterinarians for allowing Mad Cow Disease to enter the food chain, veterinarians answering that physicians were responsible for the contamination of the blood-transfusion system.

Viewing Mad Cow Disease through the contaminated blood scandal made it a particularly unstable phenomenon, whether it was considered as an animal disease or as a human disease. An animal disease can be characterized either as an epizootia, when it concerns only animals, or as a zoonosis, when it concerns also humans. From the perspective of veterinarians, Mad Cow Disease is the moment when public opinion discovered that animal diseases could spread from animals to humans ; incriminating the use of meat and bone meals was only a way to deny this problem by saying that the cows who had become mad were not really animals. The interpretation of Mad Cow Disease therefore divides two professions serving public health : in a certain perspective, public health is a prolongation of animal health, but in another perspective, it goes against it. This makes food safety, rather than a stabilized domain, a field of problematization around a particularly unstable phenomenon. Veterinarians and physicians came to be opposed because, in the wake of two scandals, they came to take two opposite views of the same phenomenon<sup>3</sup>.

Having described its genealogy in the two scandals that have struck Public Health in France in the 1990's, I will now show how this original tension was expressed more or less formally in the daily life of the Agency during the years 2005-2007 when I did my fieldwork.

## **The Daily Life of Expertise : Displacements of a Contradiction**

### **a) Contradictory debate and the production of recommendations**

When I arrived at the AFSSA, this tension between physicians and veterinarians was crystallized in the division between expert committees where physicians were predominant, such as those on Biotechnologies or Nutrition, and those where veterinarians were the majority, such as those on Animal Health or Animal Food. Veterinarians and physicians have nonetheless

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<sup>3</sup> Annemarie Mol talks about « various enactments of a particular disease » (Mol, 2002). I rely on her perspectivist method, that allows to translate scientific debates in ontological premisses. I add to her work the notion of contradiction, that she would probably refuse for philosophical reasons.

worked together in the expert committee on BSE (Bovine Spongiform Encephalopathy) ; but there are current controversies whether this committee should be absorbed by the Animal Health Committee or remain autonomous. The BSE Committee is particularly symbolic as it was the original committee, "Comité interministériel sur les ESST et les prions" usually just called "Comité Dormont", on the model of which the other committees were configured. Created by the French Government in 1996, it gathered around the charismatic figure of a renowned scientist, Dominique Dormont, experts from all kinds of domains to identify the BSE infectious agent and issue recommendations (avis) limiting its dissemination. The time of the Comité Dormont is remembered as a time of scientific stimulation, contradictory debates, urgent decision, and a sense of the political importance of the work done (Estade and Rémy 2003). François Moutou, who took part to the Comité Dormont and now belongs to the Animal Health Committee at the AFSSA, recalls : « There were a few recommendations in which the majority thought in one direction and some persons thought the other way, and the rule was that people should not exercise auto-censorship and should dare express their point of view. » Today, many experts complain that the work has become routinized, though still run by an imperative of urgency that becomes a rule in itself. The Groupe d'Evaluation Collective en Urgence on Avian Influenza is composed exclusively of veterinarians : physicians who were first contacted gradually declined assistance. The form of contradictory debate then tends to become an empty space, as professions tend to reassert their fundamental doctrines. Retrospectively, the time of Mad Cow Disease is remembered as a time of collective effervescence when contradictions could be expressed in the pursuit of Public Health ; today, the tensions cannot take the form of a contradiction, and are expressed in other ways.

One significant event was the rewriting of the advice on Q Fever, an animal disease that can be transmitted to humans. The head of the DERNS recalls : « In December 2004, the expert committee had produced collectively an advice that, in the eyes of the director of the Agency, underestimated the risks of transmission to humans. Consequently, we at the DERNS proposed to add remarks to the published advice, that were in real contradiction with the opinion of experts. It was violent : veterinary experts were like a microcosm, and we had to cut in this fusionnal way of working. We then had to give an account to the expert committee, who acted like a tribunal, and asked the secretaries to support them. It was a real trauma ; now, when the DERNS knows that a recommendation is sensitive, that is, when it concerns agricultural interests, they launch the alert before the recommendation is published. » (interview) A veterinarian working for the AFSSA says that the Animal Health Committee, though composed of very different personalities, suddenly became very unanimous : « On one side, there were thirteen experts, some of them specialists of the Q Fever, on the other, there were generalists, who wrote

something else, in contradiction with the report. » This episode is interesting because it is the only moment in the life of the Agency when a contradiction between experts was publicly expressed, through the juxtaposition of the opinions of the experts and of the DERNS on the same recommendation. Since the contradiction doesn't appear between experts, horizontally discussing, it is displaced in a hierarchical way between the expert committees and the DERNS, vertically divided. But after this dramatic episode, the DERNS has tried to avoid such publicization of the disagreement by anticipating the opposition of the Animal Health Committee: contradictions have once again disappeared in the daily routine of expertise.

### **b) Conflicts of interest**

These tensions can also be observed in the use that is made of the notion of conflict of interest, which guarantees that those who evaluate a project do not have an economic (or political or ideological) interest in the realization of that project. If consumers associations have the right to ask questions to the Agency, food industry companies do not have this right, and are cautiously kept outside of risk assessment. Experts have to declare their conflicts of interest every three years, when they apply or reapply for the Agency, and at the beginning of each expert committee, as a kind of ritual of purification that allows them to enter the space of expertise. But this declaration is interpreted differently according to the position of experts in the field. For some physicians, the declaration of a conflict of interest is a sufficient motive for leaving the space of discussion. « If I am in a conflict of interest, I prefer not to attend the discussion », says the head of the DERNS recalling the opacity that reigns in certain places of the hospital where profitability is more important than the protection of human life. « Do you feel you have a conflict of interest ? » says the president of the Animal Health committee when an expert says he has previously worked on a project for the Minister of Agriculture. « No. I have examined this project in terms of collective expertise, and not as an individual expert », replies this veterinarian. This means the expert may speak in two different modes : as a participant in the food chain that he needs to know in order to evaluate the safety of a production technique, and as a participant in collective expertise organized by its own rules of independence and transparency - causing a singular schizophrenia in every scientist, who must divide between the individual and the collective expert.

The division between veterinarians and physicians should not be overemphasized on this issue. Dominique Turck, a physician who runs the Nutrition Committee, works for milk companies and admits that he cannot evaluate the safety of a milk if he doesn't know the technical and economic aspects of the production. « We all have a conflict of interest », he says, to suggest that talking about the commercial aspects of nutrition issues is what makes the discussion interesting.

In a world of experts where economic interests cannot but interfere with pure science, it is better to speak of « interested knowledge » rather than denounce conflicts of interests (Lakoff 2005 : 141). But it is also interesting to observe how the accusation of being in a conflict of interest expresses other tensions between experts, the best way to discredit an expert being to say he/she has a conflict of interest. Declaring one's conflict of interest is a delicate task, that can withdraw an expert from public expression for a long time : as everyone knows who works for which company, it is considered better not to declare publicly one's conflicts of interests. Because they are suspected of taking the point of view of breeders on animal diseases, veterinarians are collectively accused of being in a conflict of interest ; but this accusation has no formal value, and only displaces the tension between experts in other arenas of the Agency. Therefore, the notion of conflict of interest displaces the contradiction between experts from the scene of collective expertise to the corridors of the Agency, where it takes the form of rumor rather than public judgement.

Having described the displacements of the contradiction between animal health and human health in its more formal aspect (through the different spaces of the Agency where it is expressed<sup>4</sup>), I will now turn to its content, i.e. to the different visions of the same disease produced historically by this contradiction. Rather than « visions of the disease », which would sound too culturalistic and holistic, I will talk about « rationalities of risk », to show that these different visions are rational because they represent different aspects of the same pathology, the contradiction of which forbids to produce a unique and homogeneous conception. My hypothesis is that these different rationalities transform each other, which means they are structural version of the same contradiction that they displace on different contents in different contexts.

## **From Mad Cow Disease to Avian Flu : a Transformation in the Rationality of Risk**

### **a) Prevention, Precaution, Preparation**

The difference between veterinarians and physicians in risk assessment is clearly expressed by François Moutou, a specialist of animal epidemiology and member of the AFSSA :

« When we assess risk, from our data, we say the risk should be as high as this and as low as this, with a probability of 95% to be between these two levels. The administration who manages risks sees only the highest risk and adapts all the measures of management to this risk. Then the question is : is it worth showing that there is uncertainty while on the other side they take it as the certainty that it should not be at the highest level of risk ? So if new information leads us to lower the level of risk, it is not certain that the administration modifies the plan of prevention.

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<sup>4</sup> To be complete, this description of the tensions of the Agency should look at the contradiction between the data produced in the labs and that which are used in the expert committees. Unfortunately, I could not do this study extensively, though I have interviews showing that these contradictions exist.

Take Avian Influenza : we are still at the highest risk, while epidemiological data do not go in the sense of the risk of transmission to humans. » (interview)

This declaration illustrates the difference between two rationalities of risk that I will call, following the French words (which may not be equivalent to their English counterparts), prevention and precaution. Rather than saying that veterinarians emphasize low risks while physicians emphasize high risk, it is better to analyze these two words as indicating two different visions of a disease.

Veterinarians have traditionally practiced prevention, in the sense that they have established a network of surveillance based on epidemiology in which every single case in farm animals can be detected and analyzed, so that they can intervene to minimize the risk of transmission in a population. They represent animals as a population where infectious agents are transmitted before they eventually pass to men. The status of animal epidemiology is therefore ambivalent : it is not clear whether the study of the virus aims at avoiding its transmission to humans or at reducing the cost of its effects on animals. The infectious agent is the enemy, but the animal livestock is the element through which it propagates. We can read in a textbook of epidemiology : « To fight with success against an enemy, it is necessary to know it. For that, we need to classify animals and groups of animals according to their status with respect to diseases. » (Toma et alii, 2001, XXVII) Prevention, in that sense, is an anticipation of the infectious cases in which the animal population is the equivalent of a « milieu » that man has to know in order to be protected against its threats, but also to maximize its economic potentialities. The rationality of animal epidemiology is a rationality of cases and zones of propagation : concepts of prevalence and incidence orient the gaze toward the proliferation of cases in order to make them predictable. The fight against diseases implies the accumulation of numbers and the delimitation of zones : it is the knowledge of a certain milieu in which humans and animals are both solidary and opposed as regards their common exposure to the disease. Animals that are apparently healthy can propagate the infectious agent in a much more rapid way than animals with diseases ; some animals can be considered, on the contrary, as epidemiological deadends. Prevention thus opens a spectrum of animal classifications after the incidence of a singular case : it is based on the confidence of humans in their capacity to cover the animal population with an overarching gaze.

Precaution, on the other hand, implies a space of action based on the limitation of knowledge. Knowledge is not used to clarify the propagation of the agent but to raise doubts about the very possibility of any prediction. François Ewald makes this distinction : « while the attitude of prevention supposes a relation to knowledge that guarantees the veracity of knowledge, the hypothesis of precaution incites to make the most deceitful malicious demon a company for all moments » (Ewald 1996, 402) Under the principle of precaution, the result of

knowledge is itself brought into suspicion : the introduction of meat and bone meals is compared to the use of Genetically Modified Organisms as manipulations of living beings by science that introduce new risks. But far from discarding knowledge, precaution implies a new use of knowledge, to protect reflectively a world that science itself has transformed. In a rigorous sense, the principle of precaution can be invoked when the risk is not known and needs further research before an action can be undertaken. Precaution represents the risk as the highest catastrophe to stop industrial action and open a space of scientific reflection. While prevention defines risk in probabilistic terms, precaution implies a public policy in which risks are seen from the perspective of a moral community : a low probability/high consequences epidemiological case becomes a catastrophic event that orients public action.

Mad Cow Disease opposed prevention and precaution in a schematic way. Veterinarians followed the dissemination of the infectious agents in the food chain, and took into account the interests of all the actors of this chain : if a measure seemed inappropriate for breeders, they would try to minimize the risk. On the contrary, physicians emphasized the worst scenario (in 2002 the British Medical Journal published a study by James Ironside predicting 10 000 human deaths in Great-Britain, which lowered the first estimations of 700 000 in 1996), insisting on the spectacular aspect of the human disease (often young patients suffering from degeneration of the brain), the difficulty to identify the pathogenic agent (there is still no consensus on the role of the prion) and the long period of incubation. One of the physicians who set up the AFSSA confessed to me that there may have been more human deaths from the suicide of cow-rearers than from the consumption of contaminated cow, but that the principle of precaution had to be implemented to reorganize the food chain after the disorders revealed by Mad Cow Disease.

Avian Influenza has transformed this opposition in an interesting way. After the first hypotheses imputing the spread of the disease to migratory birds, veterinary experts of the GECU Avian Influenza were influential in stressing that the trajectory of the virus was parallel not only to the itinerary of migratory birds but also to the Trans-Siberian road, on which there is a large amount of commerce in domestic poultry and many industrial farms. This argument is very similar to the one which had been proposed at the time of Mad Cow Disease, when the contamination was imputed to the faulty use of animal foodstuff ; and yet, the problematization of safety became very different. Avian Influenza presented an opportunity for veterinarians to use the logic of prevention in a renewed fashion. The question that they asked was not : is there a risk in the consumption of poultry meat ? but : how does the disease propagate, and how can we stop it ? The analysis of the risks of Avian Influenza implied drawing a spectrum of potential animal carriers : it was said at the start of the epizootia (and then denied) that the pig was a carrier, which made it a possible laboratory for mutation to humanly transmissible forms ;

people left their cats on the roads when they thought that they could also have the disease ; a Japanese study has recently shown that flies could be host to H5N1, which implied huge measures of desinsectisation in farms. As Marc Savey, one of the veterinarians who founded the AFSSA, says : « We expected a huge avian spectrum but the spectrum has not opened itself so much. If we say that the spectrum is more or less opened, it is not the same conclusion in terms of risk-analysis. » (interview) Since the nature of the virus was not in question, the point was to classify all animal species with respect to the possibility of its transmission : between sensitive species and receptive species, between carriers and epidemiological dead-ends...

But physicians took it in a different way, and introduced a new rationality of risk. If the H5N1 virus was of the same stock as the one that had killed 20 million people after World War I, it could cause a worldwide pandemic (some talk about 60 million human deaths basing on the precedent of the 1918 Spanish Flu), whose effects should be immediately foreseen and mitigated. The question for physicians was not: is there a risk of mutation of H5N1 to an inter-human form ? but : are we prepared for this catastrophe ? and what vulnerabilities would it reveal in the Public Health infrastructure ? (see Collier and Lakoff 2006) Physicians have thus shifted from precaution to preparedness (préparation). Didier Houssin, in charge of the Direction générale de la Santé Humaine and Délégué interministériel de lutte contre la grippe aviaire, characterizes this disposition to preparedness while relying on the language of prevention when he says : « Contrary to the situation in 1918, we are not in a situation that leaves us entirely unarmed. In 1918, our grand-parents did not even know it was a virus, they had no capacity for identification, they had no way to fight or prevent this phenomenon. We are not in the same situation. We have today a network of surveillance and epidemiology that, even if it is perfectible, has a certain capacity to react. We know it is a virus. We even know it intimately. We know its genome from A to Z. We are able to produce and transmit informations rapidly. So we have capacities that give us a certain responsibility. » (Houssin, 2006, 36) Because prevention makes it possible to see the dissemination of the virus in its most intimate movements, it gives a certain responsibility to the end of the chain of dissemination, even if this end has not been attained yet. To foresee the epidemic means both to prevent its emerging forms and to prepare for its catastrophic effects : buying masks to protect those who work in hospitals, collecting vaccines to cure the population, organizing hospitals so that they can receive patients, schools so that they can provide teaching without displacement, and enterprises so that they can still work with a minimum working force. In this new rationality of risk, precaution is not out of the game, but becomes a necessary step between prevention and preparedness : if the H5N1 virus appears without knowledge on its pathogenicity, measures of precaution can be taken that make it possible to implement the preparedness plan: a cluster of human forms of H5N1 can lead to the launching of the pandemic



plan even if no proof exists that there is an inter-human form of the virus. Rather than replacing precaution, preparedness orients it towards a horizon of responsibility which is infinitely opened to the future.

Veterinarians have been surprised by this new rationality of risk. They think that the money spent on preparedness should be dedicated to prevention, arguing that actual relationships have more value than virtual catastrophes. The contradiction between veterinarians and physicians has never been so wide, because it does not pass only between two poles of the alimentary act, production and consumption, as it was the case at the time of Mad Cow Disease, but between two relations to animal disease, as an actual zoonosis and as a virtual pandemic. Consequently, while physicians talk about « Avian Flu », to insist upon its possible consequences for humans, with symptoms very similar to human flu caused by a super-spreading virus, veterinarians talk about « Avian plague », to suggest that this kind of symptoms were already present in many animal diseases (such as the Newcastle disease). While physicians stress the radical shift that would happen if the H5N1 virus had an inter-human mutation, veterinarians show that low-pathogenic forms of H5N1 are very common among animals and excreted daily without major consequences. Moreover, veterinarians are even more radically dispossessed of the animal disease as the new rationality of risk does not come from food safety but rather from civil defense (Lakoff 2007). Therefore, while the tension between veterinarians and physicians could until now be expressed in the AFSSA, through the displacements that I have described, they are now expressed outside of the Agency, particularly through the opposition of the Minister of Agriculture and the Minister of Health. In the discussion on preparedness for Avian Influenza at the Assemblée Nationale, a veterinarian is thus castigated by the President of the Commission: « The veterinary world should not treat this question in a spirit of competition with the world of public health. Under-estimating human pandemic to support the problematic 'Avian Flu' is a wrong approach in terms of communication. The veterinary world has things to say, including on humanitarian and economic grounds. If you want to help these countries restore their proteic capacity, it is legitimate, but it doesn't require an under-estimation of the risk of human pandemic to pass the message. » (Le Guen et Door 2006, 252)

The opposition between the two expert groups should not be too blunt, though. Veterinarians clearly saw that there was something new with Avian Influenza: the different occurrences of the disease are not only compared through a network of surveillance, but are immediately translated in terms of a genetic sequence, so that it is possible to predict the future mutation of the virus. Avian Influenza makes it necessary to do prevention not only at a local and symptomatic level (as for its analogous form, Newcastle disease) but also at a global and genetic level (which makes it possible to say that the H5N1 in the Dombes area is the same lineage as

that of the Qinghai Lake in China). And since a few amino-acids separate the current H5N1 virus from its inter-human form, prevention is not radically opposed to preparedness. With these three terms (prevention, precaution, preparedness), it is possible to describe the displacement of the tensions between the two professions : each one of them had internal oppositions depending on how experts viewed the relations between these three rationalities of risk. A description of these internal oppositions would be beyond the scope of this article. I will rather focus on how this opposition became problematized when it was confronted to technical measures.

### **b) Culling, confinement, vaccination**

Three technical measures raise similar problems dealing with Mad Cow Disease or Avian Influenza. They aim at stopping the disease, yet with different rationalities of risk assessment. If we take these rationalities in the paradigmatic form that has been described, we can see how they interact in the discussions of experts on these measures.

Culling (massive slaughter of animals and usually destruction) is the most impressive aspect of the fight against the spread of animal diseases. It can be described as a sacrifice of innocent animals in order to collectively assert the ideal of public health, which would account both for its emotional aspect and its difficulty to be represented (picturing culling is often forbidden by the States who practice it in a Public Health objective). But it can also be described within the Agency as opposing two rationalities of risk: prevention and precaution. When the AFSSA, in June 2001, had to give a recommendation on the culling strategy after the discovery of a BSE case in a cattle herd, veterinarians were in favor of a selective culling whereas physicians were for a total destruction of the herd. As the modes of contamination by the prion were unknown, it was a precautionary measure to kill all the cows that were in contact with the contaminated case; but from an epidemiological point of view, it is a fact that there has very rarely been found two cases in the same herd. The recommendation was therefore a compromise between the logic of prevention and the logic of precaution, that was considered as unclear by major actors of the food chain: it proposed to adapt culling measures to the results of expert studies, while maintaining the same level of safety for the consumer. As the director of the Agency explains, the logic of precaution was necessary because it restored trust in public opinion: it was a protection for the government against all critics that would accuse them of endangering consumers, but the responsibility was delegated to the experts. The director of the AFSSA, physician Martin Hirsch, writes : « The government could say it was a preoccupation for precaution, and that it was due to scientists. And total culling could reassure both the consumer to whom it was explained that a radical measure was taken, and the other countries to which exports were made. » (Hirsch 2002, 223) Marc Savey, who publicly disagreed with this policy, says : « An animal disease, you

control it mechanically, whereas with Mad Cow Disease, there were massive culling that became morally unacceptable for our contemporaries » (interview). For veterinarians, the massive culling showed that the precautionary principle was a moral, not a scientific, principle, as it reassured consumers while shocking their sensitivity: it was not a technical measure, that is, a way to limit the propagation of the infectious agent.

The first cases of H5N1 in France triggered a similar disagreement on confinement, that is, on the necessity to close the farms situated on the route of migratory birds suspected to carry the H5N1 virus. If the transmission of the virus is airborne (and not, as for Mad Cow Disease, through consumption), domestic birds have to be confined so that they don't get the virus from migratory birds, or spread it to humans. But this disagreement took place not within the Agency but between the Agency and the government. On 2005 October 19, the AFSSA published a recommendation in which veterinarians asserted that the risk of transmission was not high enough to justify the « claustration » of poultry farms outside of the zone where the first H5N1 virus had appeared, but said they could reconsider the opportunity of this measure in view of the epidemiological data. On 2006 October 15, the Minister of Agriculture, Dominique Bussereau, decided to impose the confinement of farms in 21 departments, arguing : « As far as confinement is concerned, we go very far in the application of the principle of precaution. If we have extended confinement, it is not only because of the events in Turkey (97 infectious cases), but also to prepare our farmers for a return of migratory birds in February and incite them to think about the way they work. » (Le Guen et Door 2006, 127) The argument of the government mixes the rationalities of precaution and preparedness : the limits of precaution are pushed so far that it becomes preparedness. Precaution would imply to build a space of transparency where the conditions of dissemination of the virus could be studied. But by confining farms in places where the virus is not supposed to spread, it rather creates obscurity and confusion; the aim is to prepare breeders for higher biosecurity measures when the virus really appears, through an « imaginative enactment » of the event (Collier and Lakoff, 2006). Confinement is a technical measure that establishes frontiers so as to institute a space of mobilisation in the expectation of the catastrophe.

The alternative to culling, and complementary measure to confinement, is vaccination. In the epidemiological rationality of veterinarians, vaccination is used as a preventory measure around the zone where culling has been practiced. Culling and vaccination delimit two concentric zones around the point of apparition of the infectious agent. This is what made the culling of mad cows so scandalous : there was no vaccination possible. For Avian Influenza, vaccination is possible, since the virus is perfectly known, but it is costly : animals who have been vaccinated cannot be transported for a certain time, and distributors fear that consumers might be disgusted

by a meat which has been vaccinated. Vaccination of animals therefore requires an identification and a form of surveillance and tracking, and implies an economic rationality : what is the benefit of the vaccination in relation to its cost ? When China announces that it will vaccinate its 13 billion chicken, it pushes to its limit the logic of prevention. But the question of vaccination is totally different if seen from the vantage point of pandemic preparedness, since it becomes the question of human vaccination. As long as the inter-human form of the H5N1 virus has not appeared, laboratories that work on the vaccines, have to produce forms that evolve while the virus mutates. The population will be asked to stay at home before the adequate vaccine can be produced, and once this vaccine is available, it will be administered first to physicians and nurses. The question of vaccination becomes an ethical question: who will receive the vaccines first ? And how can the population be taught to wait until the adequate vaccines are produced ?

### **c) From Health Safety to Biosecurity**

Avian Flu introduced a new rationality in the general domain of security. While prevention relied on nineteenth-century techniques of public health such as culling the source of a disease, precaution introduced a new rationality of « health safety » (sécurité sanitaire) that assesses risks in a public debate. Avian Flu pushes this rationality to its limit by preparing all the population to a coming catastrophe and controlling the disease through early warning systems. This new rationality can be described by the term « biosecurity » which encompasses a new category of threats at the limits of health issues and military issues (Collier and Lakoff : 2008)

The term « sécurité sanitaire » (health safety) was coined as an answer to Mad Cow Disease, and defines security as the restoration of trust and transparency in a domain where relations have become opaque and undetermined. Health safety, in the terms of the Law that instituted the AFSSA in 1998, is a relationship between those who commercialize substances, be they food or drugs, and those who consume them, guaranteed in such a way that the risks of consumption are not higher than the benefits (Tabuteau 2002). Biosecurity refers to the pole of production rather than consumption: it points to technical measures aiming at the control of beings situated at the limit of production (migratory birds, in the case of poultry farms concerned by Avian Influenza, is a paradigmatic example) that are at its limit, such as animals considered as factories for food or coming from foreign countries. These are two different conceptions of the social space : while health safety aims at restoring solidarity in a community that has become opaque to itself, biosecurity produces solidarity with living beings at the limits of the social space.

The biological characteristics of the pathogen itself structure the type of security practice that emerges in response. The Mad Cow infectious agent was a protein whose mechanism was unknown but whose presence was certain: health safety aimed at making visible what remained

invisible, and thus avoid the long-term effects of the disease. The H5N1 virus is perfectly known in its structure, as it has been analyzed since the 1997 Hong Kong outbreak, but what is unknown is when it will mutate to an inter-human form ; therefore, the security measures aim at pushing further in the future the moment of the catastrophe. Marc Savey says : « Being an expert on Mad Cow Disease is like watching a movie in slow motion : when we know the beginning, we know the end. If there was a risk, in terms of public health, it has already been taken. For Avian Influenza, it is a science-fiction film with a classical scenario : we know every amino acid, we just don't know how they will combine. Hence the role of wild fauna, where combination can occur, and we can assess the risk when we know what animals have been concerned. Avian Influenza goes very quickly and we have to be very calm when people talk about virus-bombs : Mad Cow Disease goes very slowly, it has a great inertia, and we need to think more quickly. » (interview) If there was much excitement among experts to identify the BSE agent, the H5N1 virus was seen with disabusement as an already-known virus. Mad Cow Disease raised the problem of the time of incubation, and forced to go faster than economic interests ; Avian Influenza raises the problem of the space of dissemination, and obliges to slow down international transportation.

Biosecurity and health safety, in the domain of animal disease, cast differently questions of causality and responsibility. From the perspective of health safety, the institution is responsible for the quality of the substances that circulate within a territory : if a problem has occurred in the production of a food or a drug, the role of the Agency is to bring it to public light, and to assess it as a risk. Causality is transformed into responsibility by the collective framework of public health. Through the use of the term « biosecurity », in contrast, responsibility is borne by those who stand at the limits of the human community, where viruses appear. When there are controversies about who should pay for the contamination of a poultry flock, responsibility is most often imputed to the breeder who has not taken biosecurity measures. The role of the Agency is then to retrace the chain of contamination so that the first actor of the chain appears as a causal agent. Biosecurity for animal diseases implies a politics of declaration and suspicion: if the H5N1 virus concerns the world community, all countries have to declare to the World Organization for Animal Health (OIE, based in Paris) both their animal cases and their human cases, and countries that declare only human cases, such as Indonesia, are considered as untrustworthy.

Raising differently moral issues, health safety and biosecurity are also two different conceptions of nature. Health safety, as it was problematized by physicians referring to the contaminated blood affair and Mad Cow Disease, points to a nature that has been altered, in which regular lines of production and exchange have been « denaturalized » for economic reasons. The role of the institution, in that perspective, is to restore a « second nature » by

qualifying substances - even if most actors agree to say that there is no such thing as « pure nature ». With biosecurity, as it is problematized by veterinarians for Avian Influenza, nature is seen as proliferating with diseases: migratory birds are suspected of propagating the virus, and those who live closer to animals are considered as most exposed to this disease. Therefore, measures of biosecurity such as confinement and sanitary cleansing are aimed at limiting this proliferation. We can speak of a « supernaturation » in the sense that the transformation of the environment has put natural phenomena out of control, in such a way that nature seems to take revenge against those who have transformed it. The demand for biosecurity is infinite since living beings appear as proliferating when the divide between nature and culture is no longer available to contain it.

Biosecurity and health safety finally raise differently the issue of sovereignty. Health safety clearly points to the horizon of the sovereign state : even if the AFSSA only has a consultative power, it addresses its recommendations to the State that can, through its services such as the DGCCRF, stop the commercialization of a dubious substance. Mad Cow Disease can be seen as the reaffirmation of sovereignty in an economy of global circulation, particularly through the use of the embargo. In the case of Avian Influenza, it is less clear who has the power to stop the global transportation of poultry. The World Health Organization has published an International Sanitary Rule, that describes levels of risks authorizing accrued measures of protection. But if an inter-human case appears in a state, will it have the power to cut its relationships with other states ? The question remains of the level of responsibility at which biosecurity is exercised – which raises, in return, the question of the critics that can be made of it.

### **Conclusion : Food Safety as a Critical Field**

In this article I have showed that the field of food safety is constituted by competing versions of security that I have described through three principles : prevention, precaution and preparation. This analysis was extracted from the observation of expert committees, and should be enlarged to the role of the food industry, that remained exterior to expert committees due to the fight against « conflicts of interest ». But it allows to understand a major tension in all food safety crises : that between health and agriculture, or the human good and the animal good. Food safety crises, when they crossed the domain of emerging infectious diseases, reveal a tension between two views of the animal, as a good companion and as a dangerous carrier of infectious agents. When, as in the contaminated milk scandal, the infectious agents are revealed to come from human intention, they still cast light on parts of the food chain that, due to the increasing urban environment, were rendered invisible. If the role of the experts is to trace back all these parts of the food chain that have become invisible, then the conflicts between them

reveal our ambivalent relation to food itself. Therefore, we cannot criticize experts themselves as deceiving the public through a technocratic rationality, neither can we criticize the food industry for not complying to expert rationality : the world of experts is plural enough to allow the general ambivalences of food safety to be seen through the critics they adress each other.

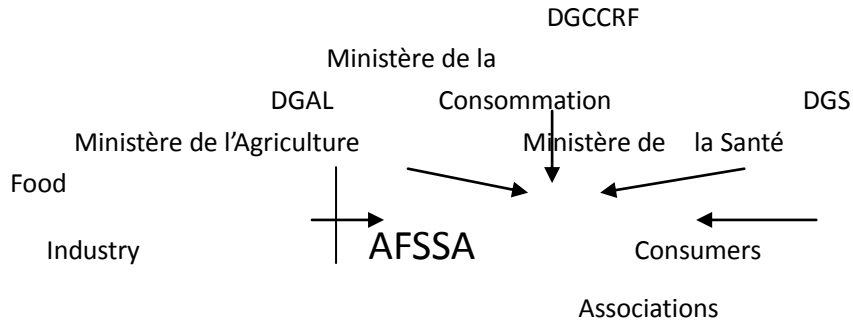
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## The AFSSA : an institution and its internal tensions



Organization	CNEVA	DERNS	
Crisis	Mad Cow Disease	Contaminated Blood	Avian Influenza
Site of expertise	Labs	Expert committees	Scenario-planning
Poles of the Alimentary Act	Production	Consumption	Virtual catastrophe
Rationality of Risk	Prevention	Precaution	Preparedness (Préparation)
Public Health Doctrine		Health Safety	Biosecurity
Technical measures	Culling	Confinement	Vaccination

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