

# ANIMAL SCIENCE IN THE CONTEXT OF FOOD CONSUMER SCIENCE

Jurij POHAR<sup>1</sup>

## ABSTRACT

The food consumer science as the science with the ambition to overcome the difference between food science and consumer science is presented. The major stakeholders involved are listed and the role of animal science and animal scientists within the framework of food consumer science is discoursed. The importance of animal scientists to understand the complexity of food consumer science knowledge system and need for them to broaden the scope of interest beyond the traditional area of expertise of animal science is stressed.

**Key words:** animal science / food consumer science / stakeholders

## 1 INTRODUCTION

The meaning of the some words or expressions could be very clear and understandable but also incomprehensible and indistinct. Many times this depends on the public or group of people using or trying to understand the word or expression. There are also situations when members of specific group are rather convinced that they exactly know what expression means, but they find it difficult when are asked to clearly and precisely define the meaning of the expression. The issue became even more complex when different languages are used to define the same matters. Someone may assume that the animal scientists have a very clear understanding what is meant by *zootehcnics*, *animal husbandry*, *animal production* or *animal science*. But it is very hard for them to precisely define the meaning of each of these expressions and even more to describe the (possible) difference between them.

## 2 DEFINITIONS OF DISCIPLINES

Nevertheless, it is obvious that the activities designated and studied by mentioned disciplines are not new.

Animal husbandry defined as "the agricultural practice of breeding and raising livestock" (Animal husbandry, 2012) has been practiced for almost 10.000 years. (Vigne, 2011; Albarella *et al.*, 2008; Animal husbandry definition, 2010) while animal science described as "studying the biology of animals that are under the control of mankind" (Animal science, 2012) started about 200 years ago. As stated by Hodges (1999) at Rothampstead in the UK during the 1840s, formal field experimentation with crops and soils started, which used new laboratory methods of analysis, thus opening a new era of artificial fertilizers, statistical analysis and objective analysis of food production. About the same time professor Justus von Liebig (1803–73) at the University of Giessen, Germany, applied chemistry to the life processes of crop plants and farm livestock. Although today animal science covers also the study of companion animals in addition to farm animals the major focus is still on animals intended to food production.

The issues of sciences related to food production are rather complex. That can be realized from the description of term "animal science" by one of leading agriculture colleges which states that "animal sciences facilitates scientific research and technology transfer for efficient and sustainable production of high quality animal prod-

<sup>1</sup> Univ. of Ljubljana, Biotechnical fAc., Dept. of Animal Science, Groblje 3, SI-1230 Domžale, Slovenia

ucts with optimal animal well-being, enhancement of the human diet, and advancement of sound environmental practices” (Perdue Agriculture. Animal science, 2012).

### 3 QUESTIONS RAISED

From this definition many questions evolves. The first question is what is meant by “sustainable production”, “high quality animal product”, “optimal animal well-being”, “enhanced human diet”, “sound environmental practice” or who decides which production, product, system of farming, diet, or practice can qualify as such.

The second question deals with the ability, willingness, responsibility and power of animal science and animal scientists to answer the first question. The animal science in such context therefore comes across issues related to the individual human being and to the society. Recently the scientific discipline entitled as *food consumer science* emerged which in our opinion can be employed to answer to the second question asked.

### 4 DEFINITION OF FOOD CONSUMER SCIENCE

Food consumer science could easily be considered as a synonym for or a hybrid of two distinct sciences. Graphically presented at Fig. 1 and Fig. 2, there is on one hand the part that might be regarded as »hardware«, i.e. science about food or food science, while on the other there is the part that might be designated as “software”, namely science about consumers or consumer science.

Food consumer science is thus intended to overcome such differences and pursues a holistic approach towards hardware (referring in particular to natural sciences such as chemistry, biochemistry, microbiology, process technique, etc.) and software (i.e. social and

humanistic sciences, mostly sociology and psychology). The latter should tell us why, when, where and how the consumer will buy and consume food, while the first should examine how food is produced. In addition, it could include a study of the impacts of the food on the growth, development, and health of the human being.

If food science was restricted to the mere study of the production of food, it would be more correct to speak about food production science and when dealing with foods of animal origin it is the discipline of our domicile – animal production science. When studying the food industry in particular, the discipline could be called food technology science. If food is not studied as a consumer/consumable product but rather as a factor influencing growth, development and health, and where the consumer is considered merely one of the living organisms (higher mammals), ignoring the psychological and focusing only on the physiological component thereof, both parts – i.e. food science and consumer science – meet in an interface usually designated as nutrition science. Food consumer science thus comprises three parts, namely: production, consumption, and nutrition. These three parts are of course interdependent and thus (more or less closely) related.

### 5 STAKEHOLDERS INVOLVED

The stakeholders in the group dealing with production include producers and processors of food; in a broader context, also distributors could be included since all the stakeholders that ensure that consumers reach food or that food reaches the consumers have to be considered in order to deal the issue in full complexity. The stakeholder dealing with usage of food is only one – the human being; yet the latter could be considered from two different perspectives, either as consumer of food (in the sense of a mere physiological component) or as buyer of

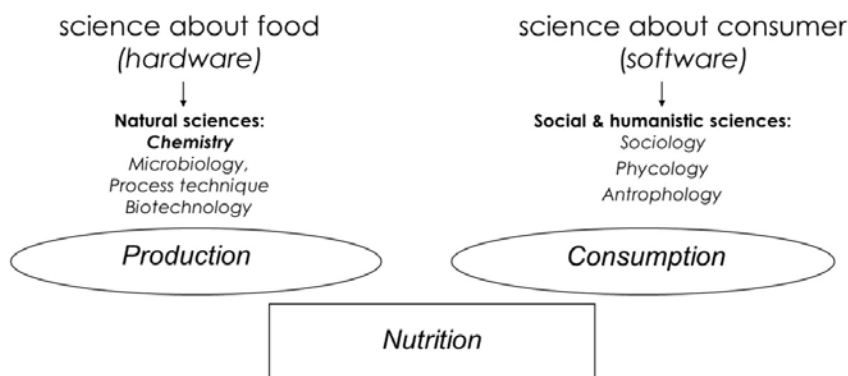


Figure 1: Hardware and software of food consumer science

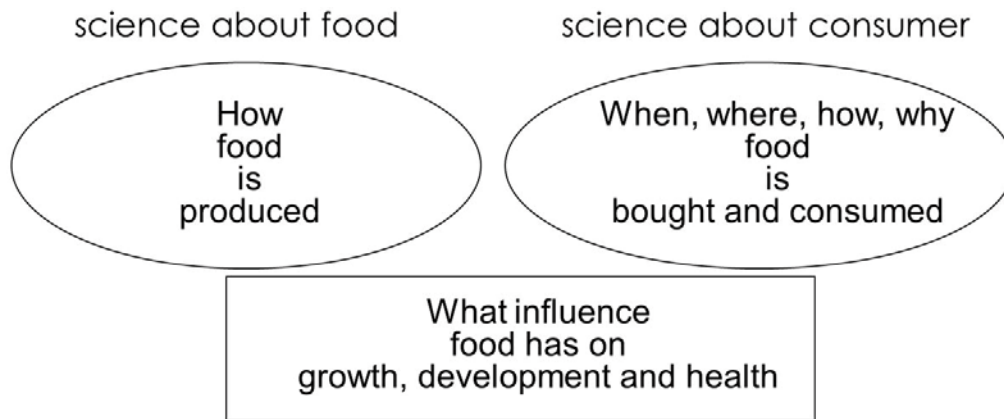


Figure 2: Focus of research

food (in the sense of the psychological and sociological component). To better understand this logic, we could refer to Henriques' theory of the Tree of Knowledge (Henriques, 2003): from a physiological point of view, the consumers may be regarded as consumer-life, while from the psychological and sociological point of view we refer to them as consumer-mind/culture.

The production is characterized by horizontal and vertical cooperation and/or antagonism among individual stakeholders (producers, processors, distributors). There is a cause-and-effect loop between these stakeholders and the consumers, while the strongest among the relations between them (producers – consumers, processors – consumers, distributors – consumers) is the relation between distributors and consumers.

The production and consumption are characterized by associations into formal and informal interest groups (Consumers' Association, Cooperative Association, Food Industry Commercial Association, etc.), each of them featuring as a new stakeholder with more or less influence on the other stakeholders.

The production and the consumption of food take

place within a certain society with prescribed legal rules. In principle, these rules serve to regulate the relations among the subjects within a certain system or, in other words, should protect a group (in our case, a stakeholder) from other group(s). In most cases, in food consumer science such applies to the protection of consumers from the stakeholders of the first group (production). The rules are drawn up and implemented by legislative branch of power and implemented by the executive branch of power. The latter can delegate some responsibilities to authorized organizations.

A competent implementation of specific tasks within each group – production, consumer and nutrition – requires properly trained human resources. Training is provided by several institutions where courses are offered for various positions at various levels.

New knowledge, basic or applied is generated within research institutions which are either public or private.

In order that system functions it requires stakeholders which finance research, education and training. These, too, are either public or private.

Knowledge is transferred into practice and to the

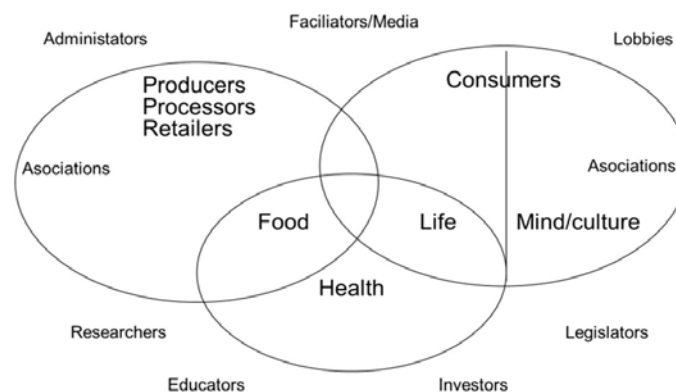


Figure 3: Major stakeholders within food consumer science system

public through formal and informal manners. A distinction may be made between the transfer of knowledge to the end-users and the transfer to intermediaries, those that will transmit such knowledge to the end-users. A particular role in the transfer of knowledge is played by certain media.

The complex system described is presented graphically on Fig. 3, where mentioned stakeholders are entitled as Legislators, Administrators, Educators, Researchers, Investors, Facilitators/Media. In order to understand the large picture it is necessary to closely examine details regarding each of mentioned stakeholder and relations between them. Pohar and Klopčič (2012) recently published extensive analysis of stakeholders relevant for food consumer science knowledge system in Slovenia.

It is only within the framework of the “large” picture presented and taking into consideration all possible interactions and relations between the stakeholders to make it possible to animal scientists to search and (hopefully) find answers raised about their mission. It is not just animal scientists and only animal scientists who decide what is “sustainable production”, “high quality animal product”, “optimal animal well-being”, “enhanced human diet” or “sound environmental practice”.

## 6 THE ROLE OF ANIMAL SCIENCE WITHIN FOOD CONSUMER SCIENCE

Animal scientists are only one group within many involved stakeholders. The role and power of each of these stakeholders are country specific and profoundly related to culture. It is well known that food issues are one of the matters mostly anchored into culture and tradition. (Sobal, 1998). However within European countries or even within countries belonging to European Union which share to some extent the same cultural background there are large differences in perception, execution and acceptance of same animal production practice. A very well documented topic regarding such differences is for example the castration of pigs. Fredriksen *et al.* (2009) write that the use of a local or general anesthetic is for the domestic market mandatory in Norway, Switzerland and the Netherlands. However anesthesia is very rarely used in other European countries while in some countries nearly all (Ireland and the UK) or the majority (Cyprus, Spain and Portugal) of the male piglets are not castrated but raised as entire males. Comparing the actual practice towards castration of piglets and alternatives to surgical castration, with the attitude of pig producers (Tuytens *et al.*, 2012) and findings of Fridriksen *et al.* (2011) about consumer attitudes about this theme, someone can raise the question who is “the boss”. There

are many other similar examples which document that it is not clear why a specific animal production practice is supported, refused, permitted or banned. Are we sure – to use the example of castration – that castration without anesthesia will be banned because the prevailing view of major stakeholder (consumer?) is that it is a painful procedure which causes the suffering of animals? Or it will be banned because other stakeholder(s) mask their own profit driven interest by blowing up the concern of one (minor) group within all consumers neglecting the view and opinion of others? It is without any doubt that animal production procedures which cause pain should not be advocated, but why then – for example – the so called catch-and-release practice of sport fishing is promoted?

At first sight it might be seen that the questions raised are out of the scope of professionals practicing animal science; that animal scientists representing one group of stakeholder within food consumer science could work independent and in separation from other stakeholder groups. Sometimes it even looks like it is unwanted that animal scientist would have a broader view and influence and it is necessary for prosperity of the discipline that they stay strictly within the limit of “studying the biology of animals that are under the control of mankind” and should not interfere with issues for which they believe other groups are accountable. Such views come from the ground outside and from inside of the animal science.

## 7 CONCLUSION

Today’s world is much more complex as 200 years ago, when animal science emerged. Animal scientists should open the windows and doors of ivory tower of “pure” animal science and allow the oxygen of fresh air of food consumer science to enter. Who should understand and know better than scientists working with animals that suffixation are inevitable outcome of oxygen depletion which occur when place of work is impermeable closed.

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