B. Protection of inventions related to the production of animal-derived agricultural raw materials

Inventions related to the production of animal-derived agricultural raw materials are protected under the patent system only, as there is no *sui generis* protection system for animal breeding. Art. 53(b) EPC and Sec. 2, No. 2, of the PatG except animal varieties and essentially biological processes for animal breeding from patent protection. Animals are not excluded from patentability, as long as higher taxonomic units than varieties are claimed.[493] The German translation of term animal varieties in Art. 53(b) EPC, as well as in former Sec. 2, No. 2, PatG read *Tierarten*, meaning animal species. Animal species is a higher taxonomical rank than animal variety. But according to the rationale of the EPC based on the Strasbourg Convention, only animal varieties are excluded from patentability. Thus, the German wording *Tierarten* is to be read as animal varieties.[494] Moreover, Art. 4(1)(a) of the Biopatent Directive used the correct term of animal varieties. Meanwhile, the German Implementation Act to the Biopatent Directive introduced a new § 2a(1) PatG also reading *Tierrassen*. So, only animal varieties are excluded from patentability but not animal species.

Up to now, there is no *sui generis* protection system for animal varieties that could compensate for the exemption to patentability of animal varieties. *Straus*[495] has already suggested introducing an animal variety protection system similar to the European or German plant variety protection system.[496]

C. Protection of inventions related to the production of processed food

The protection of inventions related to the production of processed food is considerably more favorable than that of inventions related to the production of agricultural raw materials. There are three areas particularly concerning the production of processed food. On the one hand, savor nuances comprise a field of inventions that is considered characteristic of inventions concerning processed food. Next the product-by-process claim is discussed. Finally, the protection provided by Art. 64(2) EPC for the product directly obtained by the patented process is analyzed and exemplified with three patents on food-related inventions.

493 EPO decision T19/90, Onco-mouse/Harvard II, OJ 1990, 476.

494 *Moufang,* in: *Schulte* (ed.), Patentgesetz mit EPÜ, München 2004, Sec. 2, No. 78, *Hansen&Hirsch*, Protecting Inventions in Chemistry, Weinheim et al. 1997, 273.

495 *Straus*, Ethische, rechtliche und wirtschaftliche Probleme des Patent- und Sortenschutzes für die biotechnologische Tierzüchtung und Tierproduction, GRUR Int. 1990, 913.

496 *Von Pechmann*, Ausschöpfung des bestehenden Patentrechts für Erfindungen auf dem Gebiet der Pflanzen- und Tierzüchtung, GRUR 1987, 475, *Hansen&Hirsch*, Protecting Inventions in Chemistry, Weinheim et al. 1997, 275.

I. Patentability of savor nuances

There are two German decisions relating to savor nuances. The question in these cases was whether aesthetic effects can generally justify the grant of a patent. The outcome of *Käsegericht* decision[497] by the board of appeal of the German Patent and Trademark Office (DPMA) is that a new savor nuance cannot justify the grant of a patent, as savor nuances are in the field of aesthetics rather than in technology. The subject matter of the invention was a production method for a cheese product, or a dish made of cheese, characterized by heating fumed cheese in boiling vegetable fat, usually olive oil, in combination with fresh garlic, until the cheese slices swell and the contiguous slices melt together. The patent application was rejected by the examination department of the DPMA because it lacked of a new and characteristic method. Moreover, there was no progress in another technical field disclosed. The applicant claimed that the creation of a new savor nuance would justify the grant of a patent. He argued that cooking would be enriched by the new savor. Furthermore, he referred to other methods in the food sector, e.g. cocoa processing, where savor nuances regularly justify the grant of a patent. The Board of Appeal states that the creation of a new savor nuance without technical advantages is not sufficient for the patentability of the respective process. It is reasoned that the invention's contribution to the state of the art is not a technical feature, but only a new savor. Savors are a matter of aesthetics and therefore are not patentable.

The legal situation is different if methods lead to clearly distinguishable characteristics of the product. Examples are the roasting of cacao beans in order to improve aroma and taste and the treatment of soybeans to reduce bitter substances. Those improvements can be precisely measured and distinguished, as opposed to other savor nuances.[498]

According to the *Suppenrezept* decision[499] of the German Federal Supreme Court savor nuances alone cannot justify the grant of a patent, as they cannot replace a definite technical effect. The subject matter of the patent application was a method of boiling a "soup" of whole onions roasted or fried in oil, particularly Spanish onions, or chanterelles or other mushrooms roasted or fried in oil, and wheat which has been germinated and afterwards boiled under preservation of the form of its grains by mincing preferably in blended condition, and boiling in vegetable stock. The patent application contained one single claim directed to:

> "Herstellung einer Suppe aus in Öl im Ganzen gebackener unzerkleinerter Zwiebel, insbesondere spanischer Zwiebel, in Öl gebackenen oder gebratenen Pfifferlingen (oder anderen Pilzen), gekeimtem bzw. längere Zeit eingeweichtem und danach unter Erhaltung der Form der Körner gekochtem Weizen, durch Zerkleinern in vorzugsweise vermengtem Zustand und Aufkochen in Gemüsebrühe."

497 German Patent and Trademark Office, board of appeal decision of 5.11.1958, GRUR 1959, 180.

498 Furthermore, the German Federal Supreme Court declared that even the enrichment of kitchen techniques by a new dish is questionable. Such an enrichment of kitchen technique does not justify the grant of a patent on a recipe, because otherwise countless recipes, which are tested every day in the kitchen, could be eligible for patent protection.

499 *Suppenrezept* means recipe for a soup, GRUR 1966, 249 with annotation by *Spieß*.

The application was rejected by the examination department of the DPMA because of lack of an inventive step. The contribution to the state of the art of the invention is only a savor nuance, but no objective savor improvement like bitter or sweet. Savor nuances cannot be measured objectively and therefore are not patentable. The applicant argued that a savor improvement cannot be restricted on reducing bad tastes, e.g. bitterness. Savor improvements are not to be restricted to measurable criteria. He claimed that a recipe with a superior savor effect is a technical advance. The Court stated, that the combination of substances in the soup was new. But novelty alone does not justify the grant of a patent as an inventive step must also be given. An inventive step implies only technical characteristics. Moreover, not every aesthetic effect could justify the grant of a patent, as established in the *Käsegericht* decision.[500]

Generally, savor nuances do not justify the grant of a patent, but they can do so if a non-obvious effect, like the reduction of a bitter taste, is given. To sum up, inventive steps occur not only in technology, but also in aesthetics.[501] A contribution to the state of the art and an inventive step can be based on a characteristic aesthetic effect of a product if there is additionally a special technical effect.[502] Consequently, the patentability of recipes depends on novelty and inventive step, as do all inventions in other fields of technology.

II. Food as a macromolecular substance and product-by-process claims

Food-related substances often represent macromolecular substances that are difficult to describe by a concrete chemical structural formula.[503] These macromolecular substances can often only be described by their way of production, but not by their exact chemical structure. Case law responded to the need to also protect macromolecular substances by developing a claim category of its own, the so-called product-by-process claim. Product-by-process claims make food protectable as substance claims. First the prerequisites of such a claim category are explained. Then the scope of protection of product-by-process claims is analyzed.

500 German Patent and Trademark Office, board of appeal decision of 5.11.1958, GRUR 1959, 180.

501 *Pietzcker*, Patentgesetz und Gebrauchsmusterschutzgesetz, Berlin&Leipzig 1929, No. 39.

502 *Nastelski,* in: *Reimer* (ed.), Kommentar zum Patentgesetz und Gebrauchsmustergesetz, 3rd ed., Köln etc. 1968, No. 5, Sec. 1 PatG, *Tetzner*, Kommentar zum Patentgesetz, 2nd ed., Nürnberg 1951, Sec. 1 No. 47, *Weber,* Ästhetische Wirkungen als Grundlage des Erfindungsschutzes, GRUR 1939, 451**,** *Heine***,** Anmerkung zum Urteil des 5. Beschwerdesenats des Deutschen Patentamts, *Küchenrezept*, GRUR 1959, 180, dissenting opinion: Leitsatz der Entscheidung des 5. Beschwerdesenats des DPA vom 5.11.1958, 1959 Bl. f. PMZ 14.

503 *Schrell&Heide*, Zu den Grenzen des "product-by-process"-Patentanspruchs im Erteilungs- und Verletzungsverfahren, GRUR 2006, 383, citing chocolate whose aroma structure cannot be precisely described other by its process of production.