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HUMAN EMBRYO, ANIMAL EMBRYO, CHIMERICAL EMBRYO: WHAT LEGAL STATUS IN FRENCH LAW?

Laurence Brunet* & Sonia Desmoulin†

INTRODUCTION

In 1998, the scientific review *Science* published an experiment studying the development of human cell nuclei introduced into bovine enucleated cells. In an article entitled *The Minotaur in Gestation in a Laboratory of Massachusetts*, the French newspaper *Le Monde* questioned the legality of such research in France, as well as the status of the life which may arise from this experimentation.¹ Surprisingly, the article provoked little reaction. Less than ten years later, in 2007, *Le Figaro*—another French newspaper—caused a stir with an article announcing, *Soon Embryos Half-Man Half-Animal*.² Between these two dates, some important changes had taken place in France and in other countries.

In France, the law pertaining to the use of human embryos for scientific research has been modified. Indeed, the law of August 6th, 2004 authorized by exception, and for a limited period of five years, experimentation on human embryos.³

At the same time, outside France, the issue concerning the creation of chimeras or hybrid embryos (composed of human and animal elements) raised some public concerns. In Canada, the Assisted Human Reproduction Act (AHRA) of 2004 defined a

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1. LE MONDE, November 14th, 1998.

2. Martine Perez, *Bientôt des embryons mi-homme mi-animal*, LE FIGARO, September 9th, 2007. See also, Jean-Yves Nau, *Chimères humaines et démocratie*, LE MONDE, February 23rd, 2007.

3. Act n° 2004-800, August 6th, 2004, *JORF* August 7th, 2004. See also, H. Gaumont-Prat, *La révision des lois de bioéthique et la recherche sur les cellules souches embryonnaires*, 12 REVUE LAMY DROIT CIVIL 27(2005); and also, Ph. Pédrot & B. Pauvert, *La législation applicable aux cellules souches embryonnaires*, 35 PETITES AFFICHES 77 (2005).

“hybrid,” as “an ovum of a non-human life form into which the nucleus of a human cell has been introduced,”⁴ and stated that “no person shall knowingly . . . create a hybrid for the purpose of reproduction, or transplant a hybrid into either a human being or a non-human life form.”⁵ Furthermore, three of the main Canadian federal granting agencies in Human Health and research⁶ adopted guidelines which set down, first, that “it is not ethically acceptable to create, or intend to create, hybrid individuals by such means as mixing human and animal gametes, or transferring somatic or germ cell nuclei between cells of humans and other species;” and second, that “it is not ethically acceptable to undertake research that involves ectogenesis, cloning human beings by any means including somatic cell nuclear transfer, formation of animal/human hybrids, or the transfer of embryos between humans and other species.”⁷

The United Kingdom also had to face this issue: the Human Fertility and Embryology Authority (HFEA) received two applications from scientific teams to carry out research using human cells and animal eggs to produce stem cells. The explanation for such applications can be found in the lack of available human oocytes for scientific research on embryo development. The regulatory body decided that, under current British law, it was not in a position to authorize such an experiment, and considered it necessary for British citizens to pass on the social acceptability of such experiments. Therefore, a public consultation was launched in 2007⁸ and the Science and Technology Select Committee released, in April 2007, a report on “Government Proposals for the Regulation of Hybrid and Chimera

4. Canadian Assisted Human Reproduction Act (AHRA), 2004, Section 3 (d).

5. AHRA, Section 5 (1) (j).

6. Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada.

7. Article 9.5 Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans 1998 (“TCPS” with 2000, 2002, and 2005 amendments), available at http://www.pre.ethics.gc.ca/english/policystatement/policy_statement.cfm (last visited November 6, 2008).

8. See, Public Dialogue, <http://www.hfea.gov.uk/en/1517.html#dialogue> (last visited November 6, 2008).

Embryos.”⁹ The Committee opined “that the creation of human-animal chimera or hybrid embryos, and specifically cytoplasmic hybrid embryos, is necessary for research” but “that development of human-animal chimera or hybrid embryos past the 14-day stage should be prohibited and that a prohibition should be put in place on the implantation of human-animal chimera or hybrid embryos in a woman.” Since then, the HFEA decided to give limited approval, on a case-by-case basis, for certain scientific research projects involving the creation of hybrids or chimerical embryos *in vitro*. In November 2007, a proposal to update the Human Fertilization and Embryology Act of 1990, concerning assisted conception and the use of embryos in research and therapy, was introduced before Parliament. The new Bill became an Act of the Parliament on November 13th, 2008. It supports a pragmatic legal framework by prohibiting placing “in a woman an embryo other than a human embryo, an inter-species embryo, or any gametes other than human gametes.” Mixing human gametes with animal gametes, bringing about the creation of an inter-species embryo, or keeping or using an inter-species embryo is prohibited without a license issued by the HEFA. This inter-species embryo cannot be kept after either “the appearance of the primitive streak,” or “the end of the period of 14 days beginning with the day on which the process of creating the inter-species embryo.”¹⁰

Such a legal framework still does not exist in France. Nevertheless, as with their foreign colleagues, French scientists specializing in cloning, genetics engineering and embryology begin to express interest in this field. Therefore, French lawyers, already facing the tricky issue of defining the legal status of human embryos, now have to determine the legal status of chimerical or hybrid embryos, resulting from the mixing of human and animal cells.

9. House of Commons Science and Technology Committee, Government Proposals for the Regulation of Hybrid and Chimera Embryos, Fifth report of Session 2006-07, available at <http://www.publications.parliament.uk/pa/cm200607/cmselect/cmsctech/272/272i.pdf> (last visited November 6, 2008).

10. Human Fertilisation and Embryology Bill [HL], Amending the Human Fertilisation and Embryology Act 1990, Section 4A, available at <http://www.publications.parliament.uk/pa/ld200708/ldbills/006/08006.1-7.html#j254> (last visited November 6, 2008).

The question of the legal status of the chimerical embryo reveals other disturbing issues in French law, which appears clearly to anyone familiar with the French legal system.

First, it is structured around a *summa divisio*, distinguishing two fundamental categories and regimes: persons and things, subjects and objects. Traditionally, these fundamental categories defined themselves in reference—and in opposition—to each other. Without precise legal definitions, French authors tried to define these concepts and suggested that the French word *chose*, translated roughly as thing, should apply to anything existing in the human world, whether or not it is likely to be appropriated. As regards *les personnes*—persons—as said by a renowned French Professor of Law, “we are accustomed to institutions; we don’t need to define them.”¹¹ In fact, the category of persons is closed, while the category of things is residual. The latter absorbs what the former rejects. Consequently, because of their interdependence, neither of these categories can be simply understood. Nevertheless, the need for such a distinction has always been clear for lawyers.

Several distinguishing criteria have thus been brought out: a person is characterized by the ability to act in the judicial system (by judicial deeds and trials), by the capacity to be the subject of rights and duties, by the capacity to exercise such rights, and also by what is known as “patrimony” in traditional civilian doctrine.¹² In this way, the legal concept of person is a tool to identify actors (subjects) of the legal system by their opposition to objects over which rights are exercised. But the distinction also brings with it a symbolic dimension: the actors are invested with a supreme importance. Here the ancient influence of Christianity and its insistence on the importance of individuality is to be stressed. Catholicism is the first religion to emphasize the importance of terrestrial experience as opposed to a purely extra-terrestrial attitude. The consideration for the autonomy of the individual, and for its self-sufficiency, was further enhanced with the spread of the Protestantism. To be complete, the humanist philosophy has also emphasized the self-sufficiency of the individual as a rational

11. J. CARBONNIER, *DROIT CIVIL, INTRODUCTION* n. 23 (PUF, Thémis 1999).

12. Patrimony: the economic unit consisting of the total sum of a person’s assets and liabilities.

entity, with or without any connection with God. In short, one can grasp the legal concept of person (and judicial personality), on the one hand, as a functional and instrumental tool, and on the other hand, as a symbolic institution with religious and humanist roots.

Second, despite—or perhaps because of—this symbolic dimension, the legal concept of person could not perfectly correspond to flesh and blood people. We remember, of course, the slavery statute, not abolished until 1848 in France. Slaves in French colonies were governed by the regime of goods and things (*Le Code noir*, 1685).¹³ French law also had what was called *mort civile*—civil death—which was not abolished until 1854. It was a sentence passed on persons convicted to hard labor or life imprisonment. The “civilly dead” person lost all his possessions. His legacy was passed on, as if he had died, and his marriage was dissolved. Since then, the progression of the idea of inherent rights and that of equality narrowed the gap between a person in the legal sense of words and an actual human being. The adherence of these two concepts was sought. It could be the reason why the concept of natural person appeared in the Louisiana Civil Code,¹⁴ while the concept of physical persons was acknowledged in the French civil doctrine. At the same time, the legal concept of a person was divided to accommodate the concept of a juridical person, which seems to be more open in the Louisiana Civil Code than in the French law (in which this category covers almost only corporations and associations). With this evolution arose the idea that all individuals must be understood as persons in the legal sense. This movement deepened in Europe after the Second World War with the promotion of human rights and the stigmatization of crimes against humanity. The adoption of the European Convention for Human Rights (ECHR),¹⁵ in the framework of the European Council and the creation of a special court—the European Court for Human Rights—in charge of judging violations of the convention by member states and individuals, were important events. The fact that any individual who claims to be a victim of a violation of

13. CODES NOIRS: DE L'ESCLAVAGE AUX ABOLITIONS, LE CODE NOIR DE MARS 1685, EDIT DU ROI SUR LES ESCLAVES DES ILES DE L'AMERIQUE (Daloz 2006).

14. LA. CIV. CODE ANN. art 24 (West 2008).

15. COUNCIL OF EUROPE, THE EUROPEAN CONVENTION ON HUMAN RIGHTS (Rome, November 4th, 1950).

rights protected by the ECHR can complain to the Court (under the condition that all legal recourses within national Law must have been exhausted) plays a central role in the strengthening of human rights. Furthermore, the Court has significant influence to the effect that most national laws have been modified towards a greater respect for human rights.

There is undoubtedly in Europe, since the middle of the 20th century, a movement of convergence between the different conceptual tools described: human rights, amplified and consolidated by the ECHR, reinforce the idea that the judicial personality, in his dual dimension—instrumental and symbolic—is the person's primary source of protection. But recent advances in biotechnology and the scientific interest in manipulating human genome, cells and embryos, disrupt this progression. In general, the substantial unity and the identity of the person are strikingly challenged in medical investigations and genetic explorations that try to reengineer human components. Scientific applications to experiment on human embryos and mix human and animal components shed a harsh light on the blurred frontiers of humanity. Indeed, the very concept of humanity was philosophically constructed in opposition to that of animalism, and animals belong to the residual category of things in the civil tradition.¹⁶ At the same time, the legal notion of humanity is challenged by a new concept of "human species," as in article 16-4 of the French Civil Code.¹⁷ This concept of "human species" is closer to biology and zoology than to law. In this context, the relations between human beings (and humanity), the legal category of persons (individuals with judicial personality) and legal protection have to be reconsidered. In this paper, we propose to reexamine these problematic relations through the emerging question of the legal status of the chimerical or hybrid embryo resulting from mixing human and animal cells.

As there is no specific French jurisprudence, nor legal text, regarding chimerical embryos mixing human and animal cells, a practical way to anticipate may be to combine solutions dealing with human and animal embryos. Therefore, in order to illuminate the legal status of chimerical embryos, we will proceed in three

16. See F. BURGAT, *ANIMAL: MON PROCHAIN* (Odile Jacob ed., 1997).

17. French Civil Code, art. 16-4: "nobody can interfere with the integrity of the human species."

steps. First, we will expose the current status of human embryos in French law. We will then clarify the legal status of animal embryos in France. Finally, we will discuss chimerical embryos and will propose some primary hypotheses.

I. HUMAN EMBRYOS

Given the strong protective dimension that has historically been associated with the legal notion of the person (e.g., with general legal capacity), the protections given to the human fetus and embryo are co-extensive with their legal characterization. The question is whether they can be viewed as belonging to the category of the person. To clarify this issue, we first must address the *in utero* embryo and fetus, and second, the *in vitro* embryo.

Traditionally the question is connected to the ancient Roman fiction of the anticipated personality of the unborn child for the preservation of its interests. This idea is not formally mentioned in any provision of the French Civil Code. This is a primary difference with the Louisiana Civil Code, in which article 26 states that “an unborn child shall be considered as a natural person for whatever relates to its interests for the moment of conception.” Besides in French law this rule has a strictly patrimonial understanding and therefore it does not offer a considerate status to the unborn child, namely, a protection adjusted to the humanity of the fetus.

The question of the fetus’s nature, or status, first arose in a socially controversial context, at the time of the vote on the French Law n° 75-17 of January 17th, 1975, authorizing the voluntary interruption of pregnancy.¹⁸ This law operated a compromise. It made it clear in article 1 that “The law secures the primacy of the person, prohibits any assault on human dignity and guarantees the respect of every human being from the beginning of life. The principle may only be derogated from in the event of necessity and in accordance with the conditions set out by this law.” It was a matter of finding a delicate equilibrium between the principle of respect for all human beings from the moment of conception, and the exception or justification admitted in the case of distress of a pregnant woman. The law therefore did not recognize in 1975 the

18. Until then, intentional abortion had been sanctioned by French law, except in cases where it was necessary in order to save the life of the mother.

right to abortion. It recognized simply that under certain circumstances the criminal sanction could be removed. The law, manipulating the concepts of principle and exception, in this way avoided taking a position on the characterization of the fetus as either person or thing.

The recent reform of the abortion law has slightly modified the former equilibrium.¹⁹ The period in which abortion was permitted was extended to twelve weeks instead of the ten weeks previously provided. In addition, the physician's duty to assess the mother distress was diminished. More importantly, the provisions relating to criminal offence in case of abortion have disappeared in the Criminal Code. All of the law's provisions regulating voluntary abortion have now been enacted in the Public Health Code. This modification reinforces the woman's freedom to abort.

The Constitutional Council acted similarly when it held that the law conforms with the French Constitution.²⁰ This amounted to a ratification by the Council of this equilibrium and to a refusal to give constitutional value to the idea of respect for all human beings from the moment of conception.

Some time afterward, the National Consultative Ethics Committee (NCEE) issued an opinion on the sampling of dead human embryonic and fetal tissue for therapeutic, diagnostic, and scientific purposes (opinion n° 1, May 22nd, 1984). The NCEE is an independent authority with the mission to give opinions on ethical problems and questions concerning society, revealed by the progress of knowledge in the fields of biology, medicine and health. The Committee opined that the embryo is "a potential human person." This expression is ambivalent: the embryo is not yet a person, but it has the elements of a person, and must be protected as one.

19. Law n° 2001-588, July 4th, 2001, revising the Public Health Code, arts. L. 2212-1 to 2212-11.

20. Decision n° 74-54, January 15th, 1975, available at <http://www.conseil-constitutionnel.fr/conseil-constitutionnel/francais/les-decisions/depuis-1958/decisions-par-date/1975/74-54-dc/decision-n-74-54-dc-du-15-janvier1975.7423.html> (last visited November 6, 2008).

Authors²¹ have steadily proposed the creation of a new subclass within the category of person to find an adequate protection for embryos. Most of them have suggested splitting the concept of person between, on the one hand, the functional and abstract notion of person and, on the other hand, a more flexible notion of human being. According to the authors, this reasoning was justified by the 1994 bioethics laws.²² It is thus provided under article 16-1 of the French Civil Code that “the law secures the primacy of the person, prohibits any assault on human dignity and guarantees the respect of every human being from the beginning of its life.”²³ It has been noted that this law was intended to add a new feature to the concept of person, its human dimension, and more particularly to add this new feature to the embryo.

An additional justification for this idea of a new sub-class was also found in the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine, also known as the Convention on Human Rights and Biomedicine, which was opened for signature on April 4th, 1997 in Oviedo and came into force on December 1st, 1999. Article 1 provides that the “Parties to this Convention shall protect the dignity and identity of all human beings and guarantee everyone, without discrimination, respect for their integrity and other rights and fundamental freedoms with regard to the application of biology and medicine.” This passage is explained in the Convention’s accompanying explanatory report on the Convention, which states that “the Convention also uses the expression ‘human being’ to state the necessity to protect the dignity and identity of all human beings. It was acknowledged that it was a generally accepted principle that human dignity and the identity of the human being had to be respected as soon as life

21. S. Joly, *Le passage de la personne, sujet de droit à la personne, être humain*, 22 DROIT DE LA FAMILLE (see the recording of references in n. 51) (1997); and P. Murat, *Réflexions sur la distinction être humain/personne*, 9 DROIT DE LA FAMILLE (1997).

22. Laws n° 94-653 and n° 94-654, July 29th, 1994. New provisions were added in both the French Civil Code and Public Health Code.

23. One can notice that it is nearly the same wording as in the 1975 law (authorizing voluntary abortion), art. 1.

began.”²⁴ However, in 2008, France had not yet ratified the Convention.

Moreover this attempt to give a juridical protection to *in utero* fetus was ruined by criminal court cases applying article 221-6 of the French Criminal Code. Indeed, on three occasions, the *Cour de cassation* (hereafter, Court of Cassation)—the French highest court for private law cases—stated that: “the rule that offences and punishment must be defined by law, which requires that criminal statutes be construed strictly, pleads against a charge of unintentional homicide lying in the case of a child that is not born alive.”²⁵

In one of the Court of Cassation decisions dated June 30th, 1999, an application against the French Republic was lodged with the European Court of Human Rights. It was a case of mistaken

24. The Convention does not define the term ‘everyone’ (in French ‘*toute personne*’). These two terms are equivalent and found in the English and French versions of the European Convention on Human Rights, which however does not define them. In the absence of a unanimous agreement on the definition of these terms among member States of the Council of Europe, it was decided to allow domestic law to define them for the purposes of the application of the present Convention.

25. D. Vignaud, *Note, Cour de cassation, Chambre criminelle, 30 juin 1999*, RECUEIL DALLOZ 710 (1999); Y. Mayaud, *Entre vie et mort, la protection pénale du foetus*, 4 REVUE DE SCIENCE CRIMINELLE 813 (1999); and M.-L. Rassat, *La victime des infractions contre les personnes après l’arrêt de la Chambre criminelle du 30 juin 1999*, 12 DROIT PENAL 4 (2000).

Y. Mayaud, *Note on Cour de cassation, Assemblée plénière, 29 juin 2001*, RECUEIL DALLOZ 2917 (2001); P. Sargos, *Rapport, J. Sainte-Rose, Conclusions*, and M.-L. Rassat, *Note*, all at 10569 SEMAINE JURIDIQUE (2001); J. Hauser, *Note*, REVUE TRIMESTRIELLE DE DROIT CIVIL 560 (2001); and J. Pradel, *La seconde mort de l’enfant conçu*, RECUEIL DALLOZ 2907 (2001). In July 1995, a vehicle being driven by Mr. Z, who was intoxicated, collided with a vehicle being driven by Mrs. X, who was six months pregnant. She was injured and as a result of the impact lost the foetus she was carrying.

J. Pradel, *Note, Cour de cassation, Chambre criminelle, 25 juin 2002*, RECUEIL DALLOZ 3099 (2002); M.-L. Rassat, *Note*, 10155 SEMAINE JURIDIQUE (2002); and Y. Mayaud, *Note*, REVUE DE SCIENCE CRIMINELLE 95 (2003). The child’s death was a result of the negligence of both the doctor, in failing to place the patient, who was beyond term, under closer observation, and of the midwife in failing to notify an unequivocal anomaly noted when the child’s cardiac rhythm was recorded.

For a comprehensive analysis see A. Lepage & P. Maistre du Chambon, *Les paradoxes de la protection de la vie humaine*, in LES DROITS ET LE DROIT, MELANGES DEDIES A B. BOULOC 613-650 (Daloz 2007).

identity: two Vietnamese women had nearly similar names. One of them came to the doctor to have her contraceptive coil removed. The other was six months pregnant and came for a regular check up. The doctor caused the death of the child the second woman was carrying by operating on her without performing a prior clinical examination. The woman who lost her child alleged a violation of the Convention on the ground that the doctor's conduct was not classified as unintentional homicide.

The Court concluded, on July 4th, 2004, that there had been no violation of article 2 of the Convention²⁶ because, "the issue of when the right to life begins comes within the margin of appreciation which the Court generally considers that States should enjoy in this sphere, notwithstanding an evolutive interpretation of the Convention, a living instrument which must be interpreted in the light of present-day conditions."²⁷

An author²⁸ has pointed out the incoherence of this position saying that a person causing unintentional injury is liable to criminal prosecution while a person who unintentionally causes the death of the fetus goes unpunished. He criticized the fact that a

26. Article 2 of the Convention provides: "1. Everyone's right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law."

27. ECHR, Grand Chamber §82, Vo v. France case, July 8th, 2004, available at <http://www.echr.coe.int/eng/Press/2004/July/GrandChamberjudgmentVovFrance080704.htm> (last visited November 6, 2008).

M. Levinet, *Note*, 9 LES GRANDS ARRETS DE LA COUR EUROPEENNE DES DROITS DE L'HOMME 97 (F. Sudre et al., PUF, Thémis 2007); J. Sainte-Rose, *L'enfant à naître: un objet destructible sans destinée humaine*, SEMAINE JURIDIQUE 194 (2004); J.-P. Marguénaud, *Les tergiversations de la Cour européenne des droits de l'Homme face au droit à la vie de l'enfant à naître*, REVUE TRIMESTRIELLE DE DROIT CIVIL 799 (2004); and P. Murat, *Les frontières du droit à la vie: l'indécision de la Cour européenne des droits de l'homme*, DROIT DE LA FAMILLE 194 (2004).

28. J. Pradel, *Note sous Cour de cassation, Chambre criminelle, 2 décembre 2003*, RECUEIL DALLOZ 449 (2004). The Criminal Division of the Court of Cassation has held that a Court of Appeal gave valid reasons for a defendant guilty of the unintentional homicide of a child who died an hour after her birth on the day of a road traffic accident in which her mother, who was eight months' pregnant, was seriously injured, when it held that, by failing to control his vehicle, the driver had caused the child's death an hour after birth as a result of irreversible lesions to vital organs sustained at the moment of impact.

child who has lived for a few minutes is recognized as having standing as a victim, whereas a child that dies *in utero* is ignored by the law; and the fact that freedom to procreate is less well protected than freedom to have an abortion. This can be considered as a surprising result because criminal law is normally dedicated to the protection of the human being who is vulnerable and whose life deserves to be protected.

What all these decisions reveal is that criminal law refuses to acknowledge any distinction between a human being and a person having a judicial personality. As a result, no protection is given until a child is born, alive and viable. Louisiana law appears to be very different since the child to be is considered a person for the purposes of a wrongful death action against the person which causes the loss of the fetus.²⁹

If we now consider the topic of *in vitro* embryo, we reach the same impasse. The idea of making a distinction between a person having legal capacity and a human being is also defeated. It is therefore difficult to find a relevant protection for embryos in a state of cryopreservation. We are going to see how the status of *in vitro* embryo obliges to set aside all ontological definitions of the embryo to restrict its to a teleological definition:³⁰ what is important is the use intended for the *in vitro* embryo.

Just before the 1994 bioethics law was enacted, the *Conseil constitutionnel* (Constitutional Council) sharply depreciated the embryo, denying that it can be construed as a sample of humanity. The issue of the abandoned frozen embryos that cannot be transferred into a womb was referred to the Council. The law obliges them to be destroyed after a certain limit of time. The Constitutional Council stated on July 27th, 1994 that “the legislator has taken the view that the principle of respect of every human being from the beginning of life was not applicable to them.” The relevant provisions were therefore constitutional.³¹ As a

29. LA. CIV. CODE ANN. art 26 (West 2008).

30. F. BELLIVIER, *Réflexions au sujet de la nature et de l'artifice dans les lois de bioéthique*, 35 PETITES AFFICHES: SPECIAL REVISION DES LOIS BIOETHIQUE 10 (2005).

31. Decision n° 94-343/344 DC, July 27th, 1994, available at <http://www.conseil-constitutionnel.fr/conseil-constitutionnel/francais/les-decisions/depuis-1958/decisions-par-date/1994/94-343/344-dc/decision-n-94-343-344-dc-du-27-juillet-1994.10566.html> (last visited November 6, 2008); and

consequence, the Council acknowledges the existence of a subclass of human beings, expelled from humankind, who does not deserve the respect due to every human being from the beginning of life.

Thus, the characterization of the embryo no longer depends upon its inherent nature. Rather, it relies on the willingness of another to give it the status and protections of a person. This is clear from the 1994 bioethics French law, as amended in 2004.³² “Assisted conception is aimed at responding to parental request of a couple” (in the French law “couple” refers to married or unmarried couple made up by the *in vitro* fertilization patients).³³ The destiny of frozen embryos is closely linked with the existence and pursuit of the “parental project.” If, for example, parents are separated or do not want other children, or if one of them dies, then there is no longer a parental project and the status of embryo is rendered uncertain. The embryo is either given to another couple (in accordance with adoption procedures) or used for scientific research or destroyed after five years in a state of cryopreservation, if the couple expresses no other possible choice.³⁴

In vitro embryos have a very ambiguous legal status: on the one hand, they benefit from full legal protection when they are part of a parental project. On the other hand, as soon as there is no such project (e.g. no married couple is willing and able to receive the *in vitro* embryo available for adoptive implantation), they count for nothing. This ambiguous legal status has been confirmed by the Court of Appeals of Douai in a judgment dated December 6th, 2005.³⁵ In this case, several embryos belonging to the same couple had deteriorated because of poor storage conditions (they had been kept by the hospital in containers with fissures). The Court of Appeals acknowledged that the hospital was liable for failing to provide appropriate storage, but reversed the award of damages that had been granted to the couple (10,000 Euros based on “varied

B. Edelman, *Le Conseil constitutionnel et l'embryon*, RECUEIL DALLOZ 205 (1995).

32. Law n° 2004-800, August 6th, 2004.

33. Public Health Code, art. L. 2141-2.

34. *Id.* at art. L. 2141-4.

35. Cour administrative d'appel de Douai, December 6th, 2005, Juris-Data n° 2005-291858 ; and J.-R Binet, *L'enfant conçu et le projet parental devant le juge administratif*, DROIT DE LA FAMILLE 14 (2006).

troubles in their living conditions”) in first instance by the Administrative Tribunal. The Court of Appeals considered that, in view of the specific circumstances of the case, the couple’s parental project had ceased when their embryos had been destroyed by accident: after the birth of their two daughters born as a consequence of *in vitro* fertilization, they had not maintained any contact with the medical facility where the nine leftover *in vitro* embryos were stored.

The European Court of Human Rights emphasized the dependence of the embryo destiny to the parental project in the case *Evans v. United Kingdom*, (first judgment on March 7th, 2006, and, after the referral of the case to the Grand Chamber, second judgment on April 10th, 2007 confirming the previous one).³⁶ The decision can be transposed to French law, which is close, in some respects, to the Human Fertilization and Embryology British Act of 1990.

The applicant, Mrs. Evans, had serious pre-cancerous tumors in both ovaries, requiring their removal. She and her partner were told that because the tumors were growing slowly, it would be possible first to extract some eggs for *in vitro* fertilization (“IVF”). Mrs. Evans and her partner commenced treatment at the Bath Assisted Conception Clinic. In May 2002, the relationship broke down. The future of the embryos was discussed between the parties. On July 4th, 2002 the partner wrote to the clinic to notify it of the separation and to demand that the embryos should be destroyed. The applicant contested some provisions of the Act of 1990, whereby the consent of either party might be withdrawn at any stage up to the point of implantation of an embryo. She argued that this rule, which denies her any chance to have genetically-related offspring in view of her medical history, violated her rights to respect for private and family life under article 8 of the Convention.³⁷

36. ECHR, March 7th, 1986, available at <http://www.echr.coe.int/Eng/Press/2006/March/ChamberjudgmentEvansvUnitedKingdom070306.htm> (last visited November 6, 2008).

ECHR, Grand chamber, April 10th, 2007, available at <http://cmiskp.echr.coe.int/tkp197/view.asp?item=2&portal=hbkm&action=html&highlight=Evans&sessionid=16566852&skin=hudoc-en> (last visited November 6, 2008); and B. Mathieu, *Note*, 10097 SEMAINE JURIDIQUE (2007).

37. “Everyone has the right to respect for his private and family life.” COUNCIL OF EUROPE, *supra* note 15, at art. 8.

On April 10th, 2007, approving the previous judgment, the Court, sitting as a Grand Chamber, stated that:

Respect for human dignity and free will, as well as a desire to ensure a fair balance between the parties to IVF treatment, underlay the legislature's decision to enact provisions permitting of no exception to ensure that every person donating gametes for the purpose of IVF treatment would know in advance that no use could be made of his or her genetic material without his or her continuing consent. In addition to the principle at stake, the absolute nature of the rule served to promote legal certainty and to avoid the problems of arbitrariness and inconsistency inherent in weighing, on a case by case basis, entirely incommensurable interests.³⁸

Therefore the Grand Chamber stated that, “given the lack of European consensus on this point, the fact that the domestic rules were clear and brought to the attention of the applicant and that they struck a fair balance between the competing interests, there has been no violation of article 8 of the Convention.”³⁹

A review of the French provisions and the European case law on this topic shows that the requirements for recognizing a current and justifiable parental project limit the possibility of protecting the embryo’s potential to be born. Indeed, if the *in vitro* embryo ceases to be part of a genuine parental project, it becomes a group of cells that may be used for scientific experiments or disposed by destruction. Without parental desire, the embryo lacks humanity.

Once more, the gap between Louisiana and European law is striking. The characterization of the *in vitro* embryo as “a juridical person” in the Louisiana Revised Statutes,⁴⁰ as surprising as it

38. ECHR, Grand chamber, *supra* note 36, at § 89.

Even if the Court holds that the conflicting interests of the parties are “incommensurable” and could not be “weighed, on a case by case basis,” it nevertheless compares them when considering that “the applicant's right to respect for the decision to become a parent in the genetic sense should be accorded greater weight than J.'s right to respect for his decision not to have a genetically-related child with her” *Id.* at § 90. See J.-P. Marguénaud, *La triste fin des embryons in vitro du couple séparé: la Cour de Strasbourg, Cour européenne des droits du Mâle*, REVUE TRIMESTRIELLE DE DROIT CIVIL 295 (2007).

39. ECHR, Grand chamber, *supra* note 36, at § 92.

40. LA. REV. STAT. ANN. §9:121 (2008).

could seem from a European perspective, offers effective protection to this embryo, which is entitled to be represented in a law suit. To resolve disputes between the potential parents, the Louisiana law states that “the best interest” of the *in vitro* embryo must be the judicial standard. Moreover it is impossible to destroy it intentionally, without any time limit, even if no parental project sustains it any more.⁴¹ It seems therefore that under Louisiana law, frozen embryos are potentially immortal persons. One can infer from these provisions that *in vitro* embryos could not be destroyed in circumstances close to the situation judged by the European Court of Human Rights in the *Evans* case.

The French teleological definition of embryo has allowed scientific research to take place with both public and private funds. The August 6th, 2004 law enables some research on *in vitro* embryos when they are no longer part of a parental project, if the parents give express consent. As it becomes a scientific material, the embryo is then to be regarded as a thing. These experiments are subject to authorization on a case-by-case basis by the Biomedicine Agency, which controls the interest and the necessity of such experiments. Around 45 research teams have been allowed to work on human embryonic stem cells since 2004.⁴² In this legal framework, a testing program on embryo cells aiming at establishing a chimerical model man/mouse to enable the study of HIV infection was authorized in 2006. As adult mice were used in this experiment, the “chimerical model” was not a chimerical embryo. In this context, law concerning animal experimentation could be more useful to provide guardrails.

As regards chimerical embryos, the result of mixing cells from human and animal embryos, the question of their legal status be solved by considering either the legal status of a human embryo or the legal status of animals, especially animal embryos. Having discussed the law pertaining to the human embryo, the legal provisions concerning animal embryos should now be explored.

41. *Id.* at §9:122 - 133 (2008).

42. *Rapport annuel-Bilan des activités*, AGENCE DE LA BIOMEDECINE 56-60 (2006), available at www.agence-biomedecine.fr (last visited November 6, 2008).

II. ANIMAL EMBRYOS

To clarify the legal status of animal embryos, it is first necessary to summarize the legal status of animals under French law. That will help us to clarify, in a second step, the peculiar situation of animal embryos, particularly in texts dealing with scientific experiments.

A. *Legal Status of Animals*

In France, animals traditionally belong to the legal category of things, which includes everything that is not legally a person, a sort of “default category.” They are mentioned in the French Civil Code in articles dealing with property, and their legal status apparently remains unchanged since 1804.⁴³ This remains the leading position among French scholars. The utilitarian theories of Jeremy Bentham⁴⁴ or Peter Singer,⁴⁵ as well as the theory of animal rights developed by Tom Regan,⁴⁶ have few echoes in France.

Nevertheless, some contemporary French scholars hold that animals have rights and should be treated as legal persons.⁴⁷ Some of them are lawyers and base this view on a mere technical conception of legal personality. They consider that an animal has such rights because it possesses its “own legally protected interest,” which is the criterion of a “subject of rights”—the theoretical *analogon* of the legal person—according to Ihering.⁴⁸ These authors stress the fact that the right to freely use a good—a

43. French Civil Code, art. 522, 524 & 528.

44. J. BENTHAM, AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION (Adamant Media Corporation 2005) (1789).

45. P. SINGER, ANIMAL LIBERATION: A NEW ETHICS FOR OUR TREATMENT OF ANIMALS (Random House 1975); P. SINGER, PRACTICAL ETHICS (Cambridge University Press 1979); and THE GREAT APE PROJECT: EQUALITY BEYOND HUMANITY (P. Cavalieri & P. Singer eds., Saint-Martin’s Press 1994).

46. T. REGAN, THE CASE FOR ANIMAL RIGHTS, (University of California Press 1983).

47. G. CHAPOUTIER, LES DROITS DE L’ANIMAL, (PUF, collection “Que sais-je?”, 1992); J.-P. MARGUENAUD, L’ANIMAL EN DROIT PRIVE (Preface Cl. Lombois, Presses Universitaires de France 1992); and S. ANTOINE, LE DROIT DE L’ANIMAL, (Préface J.-M. Coulon, Légis-France 2007).

48. R. VON IHERING, LAW AS A MEANS TO AN END, (I. Husik trans., The Boston Book Company 1913) (1877).

concept that flows from the strong protection of property developed since the 1789 revolution—cannot be applied as such to animals. Indeed, the right to use is nowadays limited by criminal law: ill-treatments and cruelty towards animals are banned.⁴⁹ Similarly, the right to decide freely is limited and affected by the incrimination of abandoning or provoking voluntary death of animals without any necessity.⁵⁰ According to this opinion, as animals are protected (through criminal law) even against their owner, they should no longer be characterized as things or as goods.⁵¹

Some choices made by the French Parliament may support this view. For instance, legally registered associations promoting animal protection have been authorized, since 1976,⁵² to sue as victims in certain criminal proceedings concerning animals ill-treatments or cruelty toward animals.⁵³ Furthermore, in 1999, a technical, but symbolic and legally far-reaching choice was made: the French Parliament decided to move criminal offences against animals from a part of the Penal Code entitled “Infringements on possessions” to another part entitled “Other crimes and offences.” At the same time, articles defining goods in the Civil Code have been rewritten to make explicit reference to animals, and no more only to “objects” or “things.” From then on, one can read that “animals and things that the owner of a tenement placed thereon for the use and working of the tenement are immovable by destination,”⁵⁴ and that “animals and things which can move from one place to another, whether they move by themselves, or whether they can move only as the result of an extraneous power, are movables by their nature.”⁵⁵ Beyond the vocabulary, this appeared as an important shift for some scholars that were tempted interpret as a clear distinction between animals and “objects” or “things.”

49. French Penal Code, art. R. 654-1 and art. 521-1.

50. *Id.* at art. 521-1 and art. R. 655-1.

51. See C. Daigueperse, *L'animal, sujet de droit: réalité de demain*, 1^{er} Sem. GAZ. PAL. 160 (1981); J.-P. Marguénaud, *L'animal dans le nouveau Code pénal*, RECUEIL DALLOZ 187 (1995); and J.-P. Marguénaud, *La personnalité juridique des animaux*, RECUEIL DALLOZ 205 (1998).

52. Act n° 76-629, July 10th, 1976, *JORF* July 13th, 1976.

53. The French system allows victims to bring their civil claim in damages before criminal courts, where they are referred as the *partie civile* (civil party).

54. French Civil Code, art. 524 (redaction Act n° 99-5, January 6th, 1999).

55. *Id.* at art 528.

Nevertheless, one must observe that the new version of the text leaves animals in the legal category of goods, movable or immovable when by destination.

Recently, the Act of March 5th, 2007 concerning the prevention of delinquency also modified several articles of the Penal Code dealing with additional penalties in order to include express references to animals. To be precise, the articles concerning the confiscation of things used or intended to be used for the commission of an offence (or the confiscation of things which are the product of an offence) were rewritten to make explicit reference to animals. In doing so, the Parliament gives the impression that the expression “things which were used or intended for the commission of an offence” does not cover animals, for instance dangerous dogs used to fear a victim. But, before this modification, courts applied these texts without any problems. Obviously, such modifications create more doubts than clarifications about the legal status of animals.

However, the opinion that animals should be considered as legal persons cannot prevail. Indeed, under current French law, animals can still be appropriated and general solutions applicable to goods and things are applied to animals, except when a specific provision rules them out. The existence of specific texts regarding animal protection or animal welfare⁵⁶ are not incompatible with the traditional legal status of animals, as long as animals are still legally treated as objects, things or goods. Besides, unlike Swiss or German law which textually states that animals are not things,⁵⁷ no French law explicitly extracted animals from the category of goods. On this point, French legislation may appear more coherent, as Swiss and German law on property are still applicable to animals in the absence of a specific legal solution. French jurisprudence is even clearer than the legislation. If a few courts in the 1980s were tempted to adopt some new opinion, for example by applying family law concerning children to animals, the Court of Cassation censured these minority decisions.⁵⁸

56. Specific texts most of the time collected in the French Penal Code, in the French Rural Code, and in the French Environmental Code.

57. See BGB, art. 90, and Swiss Civil Code, art. 641a. See also S. ANTOINE, RAPPORT SUR LE REGIME JURIDIQUE DE L'ANIMAL (Ministère de la Justice, May 10th, 2005).

58. See A. Couret, *Observation, Cour de cassation, Civ. 1^{ère}, 8 oct. 1980*, RECUEIL DALLOZ 261 (1981).

Therefore, the confusing elements described below, as regards the Penal and the Civil codes, do not really change the situation. Despite the academics debate, and beyond the lexical sliding, animals remain goods, and therefore things, in French law. This must be taken into account to better understand the status of animal embryos.

B. Legal Status of Animal Embryos

The legal status of animal embryos raises less debate. For those who consider that animals are goods, and therefore things, animal embryos shall all the more be defined as things (or objects). For the others, the “own interest” of an animal embryo appears difficult to outline. Law concerning the property of fruits or the “right of accession” reinforces the conclusion that animal embryos are things. Indeed, under the civil law tradition—in French law as in the Louisiana Civil Code—, in the absence of rights of other persons, the owner of a thing acquires the ownership of its natural fruits, and this solution is applicable to animals. The young of animals belong to the owner of the mother.⁵⁹ In this legal framework, the animal embryo is legally a fruit, produced by a thing, and therefore belonging to the legal category of things.

However, defining animals as things does not imply absolute freedom of action with animals. Numerous specific texts were adopted to protect animals by prohibiting bad behavior or by requiring the assent of administrative procedures. And it is important to notice that some of these texts are applicable to animal embryos. For instance, in its articles dealing with animals used for scientific purposes, the French Rural Code covers all vertebrates, *including at the embryonic stage*, except embryonic forms of vertebrates oviparous (egg laying).⁶⁰ Such an exception shows that French law does not apply the same solution for all the animal embryos: *some* of them are things and objects of free disposal, which is the case for invertebrate embryos and oviparous

59. French Civil Code, arts. 547 and 548 (Natural fruit: increase in stock belong to the owner by right of accession; Fruit produced by a thing belong to the owner only on condition that he repays the costs of ploughing, works and seeds incurred by third parties and whose value must be assessed at the date of repayment); LA. CIV. CODE ANN. arts. 483 & 484 (West 2008).

60. French Rural Code, art. R. 214-87.

embryos; *others* are also things but are protected by special texts limiting the freedom of the owner or the holder in an experimental context, which is the case for vertebrate viviparous embryos.

Beyond the question of the legal status of the animal embryos, this difference influences the conditions in which experiments can take place. When scientists want to use viviparous embryos, they must comply with administrative constraints. The French Rural Code requires a license for institutions where experiments take place and for persons who realize them. Except for the case of simple observations requiring no intervention or suffering, scientists are required to obtain a personal authorization. Licenses and authorizations are delivered by civil servants working for local veterinarian services. Since 2001, controls cover research protocols. If the experimental protocols are not in fact systematically checked one by one, scientists who ask for a personal authorization to experiment with protected animals for five years must explain the aim of their research. They also have to justify the reasons why they need to use a certain sort of animals and to assure that there is no alternative solution. Lastly, they must set measures to limit animal suffering.

Though technical, such data are of great importance for a study on mixing human and animal elements in order to create chimerical embryos. They show that controls exist for scientists and establishments where experiments take place on viviparous embryos. They also show that it is easier to work on oviparous embryos, because in this case scientists do not have to work in a licensed institution or to obtain a personal authorization to experiment, and so avoid controls.

All these information is important to anticipate questions about the legal status of chimerical embryos. What can be the legal status of this puzzling inter-species creature? In view of the relative and uncertain status of human embryos in French law, and taking into account the legal framework regarding animal experimentation, answering this question is likely to be a real challenge.

III. CHIMERICAL EMBRYOS

French law is mute about “chimeras” or “chimerical embryos.” No definitions or specific solutions have been adopted. The

question of the legal status of a chimerical embryo, mixing human and animal cells, has no clear answer. Therefore, French lawyers must use basic legal solutions and make conjectures.

Despite this first observation, a close examination of French law reveals a clue. This lies in article L. 611-17 of the French Intellectual Property Code, which holds that “Inventions shall be considered unpatentable where their commercial exploitation would be inconsistent to human dignity, order public or morality; however, such inconsistency may not emanate from a prohibition by law or regulation.” This text is the transposition into French law of article 6 of the European Directive of July 6th, 1998 on the legal protection of biotechnological inventions.⁶¹ Article 6 states that:

1) inventions shall be considered unpatentable where their commercial exploitation would be contrary to *ordre public* or morality; however, exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation; 2) On the basis of this, the following, in particular, shall be considered unpatentable: (a) processes for cloning human beings; (b) processes for modifying the germ line genetic identity of human beings; (c) uses of human embryos for industrial or commercial purposes; (d) processes for modifying the genetic identity of animals which are likely to cause them suffering without any substantial medical benefit to man or animal, and also animals resulting from such processes.⁶²

How to relate this solution to our quest? The answer is in the preamble of the Directive. Indeed, the “whereas” (or “considering”) number thirty eight of the preamble of the Directive brings some information about the correct interpretation of article 6. It specifies that “the operative part of this Directive should also include an illustrative list of inventions excluded from patentability so as to provide national courts and patent offices with a general

61. Directive 98/44/EC of the European Parliament and of the Council of July 6th, 1998 on the legal protection of biotechnological inventions, *OJ L* 213, 30.7.1998, at 13-21, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:213:0013:0021:EN:P> DF (last visited November 6, 2008).

62. Directive 98/44/EC, article 6.

guide to interpreting the reference to *ordre public* and morality,”⁶³ that “this list obviously cannot presume to be exhaustive,”⁶⁴ and that “processes, the use of which offend against human dignity, such as processes to produce chimeras from germ cells or totipotent cells of humans and animals, are obviously also excluded from patentability.”⁶⁵

This late precision provides a precious, but perhaps flimsy, clue. The legal force of a preamble of a European directive is subject to discussion. Nevertheless, this text has been written to help interpreters of the Directive. As article L. 611-17 of the French Intellectual Property Code transposes article 6 of the Directive, it is acceptable to read the French text in the light of the preamble of the Directive. In doing so, one can hold that a process to produce a chimerical embryo created from germ cells or totipotent cells of human and animals would not be patentable. Going one step further in our interpretation, one could consider that a chimerical embryo from germ cells or totipotent cells of human and animals would not be patentable. This supported opinion should convince. But it is a debatable conclusion. French Courts, French and European Patent Offices could find in the Stuart Newman’s decision of the United States Patent Trade Office another reason to choose this interpretation.

In 1987, cell biologist Stuart Newman, in collaboration with biotech-activist Jeremy Rifkin, filed a patent application for a “chimera,” described as a “mammalian embryo developed from a mixture of embryo cells, embryo cells and embryonic stem cells, or embryonic stem cells exclusively, in which at least one of the cells is derived from a human embryo, a human embryonic stem cell line, or any other type of human cell, and any cell line, developed embryo, or animal derived from such an embryo.”⁶⁶ Newman and Rifkin hoped through the application either to obtain a patent, and thus to be able to block anyone else from developing a human-

63. *Id.* at preamble (considering 38).

64. *Id.*

65. *Id.*

66. United States Patent and Trademark Office, Dec. Stuart Newman, Application n° 10/308, 135, Art unit n° 1632. See about this decision, M.-A. Hermitte, *Bioéthique et brevets dans le droit du commerce international: la construction d’un nouveau contrat social*, in LA COMMUNAUTE INTERNATIONALE ET LES ENJEUX BIOETHIQUES 111 (S. Maljean-Dubois dir., Pédone 2005).

animal chimera for twenty years, or to provoke the denial of the patent, and thus to get the Patent Office to take a clear stand against the patenting of chimeras. The 2003 final decision in the Newman applications is largely based on traditional patent requirements. The decision, for example, notes that the Newman application fails to describe adequately how the applicant intends to produce a chimera; that to the extent that it does describe how to accomplish its ends it merely duplicates already published processes. But, in a more interesting way, the Patent Office asserted its position that human beings are not patentable subject matter. The Patent Office said that “a proportion of non human cells do not negate the human’s status as a human, nor does alteration by human intervention. Thus, it is clear from a reading of the claims in view of the specification and in view of the art that the breadth of the claimed invention includes ‘humans’.”⁶⁷ In his report, the examiner also developed that, under United States patent law, only “useful process, machine, manufacture or composition of matter”⁶⁸ may obtain a patent, and that “the term useful has been construed to include the connotation that an asserted invention should not be frivolous, or injurious to the well-being, good policy, or good morals of society.”⁶⁹ In charge of applying a textual exclusion from patentability for inventions inconsistent to human dignity, public order or morality, French and European Patent Offices could adopt a similar position.

Though useful, this information does not answer clearly the question of the status of such an embryo. It is thus necessary to question other existing rules to discover possible answers to this forward-looking issue. For the purpose of our thought, three basic working hypotheses have to be envisaged, depending on the legal status of the elements mixed to create the chimera.

In a *first hypothesis*, one could consider that a human embryo even *in vitro* is a person (or a subject of rights in French legal terminology), unlike an animal embryo. Concerning human embryos, this hypothesis is less relevant according to French law than to other civil legal systems such as Louisiana law. In this context, several options are conceivable. In order to provide a maximal protection to human embryos, a solution consists in

67. *Id.*

68. *Id.*

69. *Id.*

considering that a chimerical embryo is legally a human embryo, and consequently a legal person, though it is only partially biologically human. On the contrary, one could suggest that the mixture of DNA disqualifies the embryo as a human embryo, and that the new creature is just a new type of genetically modified animal. But others pathways are imaginable. One could, for instance, make reference to the civilian rules concerning “principal and accessories” or composite things. In the civil legal tradition, to characterize a thing as accessory means that the accessory may follow the principal thing. In this view, the embryo essentially constituted by genetically human material (more than 50 percent) would be characterized as human embryo, and thus as “subject of rights.” It would be the case, for instance, of the human embryo in the brain of which animal neuronal cells would have been injected. On the contrary, embryos not presenting this characteristic would belong to the category of animal embryos and would be mere things. Another possibility lies in paying attention to the DNA of sex cells. With this solution, for instance, a duck embryo of which brain would have been partially colonized by human neurons would not be protected at all. Last but not least, one could propose to create or recognize a new specific category, but no information is available about what rules would be applicable.

In a *second hypothesis*, one could consider both human and animal embryos as legal persons. This hypothesis is not relevant to current French or Louisiana law. Nevertheless, it is still interesting to notice that the characterization of human embryos and animal embryos as persons does not imply that the same rules would be necessarily applicable to them. In the legal category of persons, different regimes may coexist. For instance, juristic persons and natural persons have a name, a domicile, a nationality and a patrimony, but juristic persons do not need physical protection or matrimony rules. So, it is still necessary to decide if the chimerical embryo would be treated as a human embryo, as an animal embryo, or as a new kind of person subject to new rules.

In a *third hypothesis*, one could consider human embryos *in vitro* and animal embryos as legal things. In such a view, which is more convincing under current French law than the Louisiana Civil Code, the mixture of human and animal embryos would inevitably fall into the category of things. At this point, two reasons would oblige a lawyer or a judge to determine the applicable rules: first,

as already explained, different solutions apply to human embryos and to animal embryos; second, different rules apply to oviparous or viviparous embryos. Undoubtedly, juridical imagination would be tested, and maybe hounded into a corner.

To go further, it would also be necessary to address the problem of a possible development of such a chimerical embryo into the womb of a woman or a female, and the problem of its birth. As a matter of fact, most of the time, the status of children or offspring depends on the status of the mother or the female which gave birth. The final paragraph of article L. 2151-5 of the French Public Health Code states that human “embryos on which research has been carried out may not be transferred for the purpose of gestation.” Using the traditional techniques of interpretation, it is easy to conclude that *a fortiori*, a chimerical embryo may not be implanted. However, the fact that this is the only reasonable interpretation cannot prevent that the legal prohibition might be trespassed one day.

Moreover, the possibility of using human somatic cells to create a chimerical embryo complicates the task. Would a chimerical embryo produced from human somatic cells and animal embryonic cells be characterized as a human embryo (which is related to the concept of “potential human person” as seen before)? It seems very problematic. Would it be legally treated as a chimerical embryo created with human embryonic stem cells? Probably not: as it has been previously explained, the use of human embryos for experimental purposes is strictly limited by specific rules only applicable to human embryos. Yet, supervising scientific research under serious regulations appears to be an important matter, even when human embryonic stem cells are not used.

To complete this rapid overview, let us add that a human embryo cannot be characterized as a genetically modified organism under current French law, whereas an animal to which some human genes were added can be a genetically modified organism. Since 1990, France (as other member states of the European Community) submits experiments on genetically modified organisms to special authorizations. It is a whole field of new questions that thus has to be investigated.

The range of genomic mixtures leads to infinite questions. Science moves forward and scientific curiosity is boundless.

Several scientists consider experiments mixing human and animal elements as tools to make advance knowledge on early human development. According to them, this could lead to a better understanding of genetic diseases and to new medical treatments. Consequently, experiments creating chimeras will probably be attempted all around the world. Unaware of the situation or underestimating the consequences, lawyers often ignore these questions. Yet, very few answers are available in our legal system. It is time to become conscious and to face these new questions. The answers to come will be all the more relevant as the questions will have been anticipated and the possible solutions submitted to discussion.

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