Takis Vidalis*

Meeting Darwin: The Gradual Emergence of Biolaw[1]

Introduction

During the last two decades, the term "biolaw" (biodroit, Biorecht) occurs steadily in a growing number of books, articles, academic seminars, workshops and university programs. By this term legal scholars describe usually the legal aspect of bioethics, although not in its wider spectrum but especially regarding biotechnology, fertility, and genetic research applications in humans.[2]

In fact, biolaw aims to cover and analyze a rapidly developing production of legal norms and instruments related to modern applications of life sciences at different levels. Indeed, international organizations such as the UN (UNESCO separately) and the Council of Europe, as well as the European Union, have adopted such norms regulating a variety of topics, and having either binding or "soft law" nature.[3] Moreover, national legislators have enacted specific legal regulations in areas like assisted reproduction and embryo research, human genetics and biotechnology. In addition, international, EU and national courts address more frequently relevant cases, creating sometimes legal novelties, as specific legislative regulation does not always exist.

It is true that this legislative mobility in bioethics indicates not only a vivid interest of modern societies about technological innovations, but also a relative uncertainty in balancing benefits and risks when addressing ethically sensitive issues. A characteristic evidence is that, in some cases, legal instruments contain provisions of "temporality" mentioning explicitly a time limit after which a legislative revision should be considered.[4] Another such evidence is a common reference to developing scientific conditions (mostly in preambles or explanatory reports) as a factor affecting the normative force of legal rules[5]. This uncertainty in reg-

* Takis Vidalis; Hellenic National Bioethics Commission, Athens, PGP Bioethics, University of Crete

1 The article is based on an original idea presented at the 21st EACME Conference in Zurich, (September 2007). I am grateful to the colleagues, participants in that discussion, for their comments and constructive criticism.

2 See, for example, a relevant analysis of the content of biolaw in: J. Dahl Rendtorff, P. Kemp, Basic Ethical Principles in European Bioethics and Biolaw, Vol. I. Autonomy, Dignity, Integrity and Vulnerability, Centre for Ethics and Law, Copenhagen and Institut Borja de Bioetica, Barcelona, 2000, p. 281 – 308. See also, J. Carlos Loureiro, The Kemp Principles: A Bio-Legal Perspective, ibid. Vol. II. Partner's Research, p. 73 – 74, and J. P. Duprat, Le biodroit, un phénomène global sans principe unificateur?, Journal International de Bioéthique 15 (2-3) 2004, p. 45 – 50. For an approach that comprises applications in other species as well, see J. Chen, Biolaw: Cracking the Code, Kansas L. R. 56, 2008, p. 1029 – 1038.

3 To give a general picture of the existing instruments:

a) Regarding applications in humans: The Universal Declaration on the Human Genome and Human Rights (1997, UNESCO), the International Declaration on Human Genetic Data (2003, UNESCO), the Convention on Human Rights and Biomedicine (Oviedo Convention, 1997, Council of Europe), along with its Protocols on Human Reproductive Cloning (1998), on Transplantations (2002) and on Biomedical Research (2005), the Declaration on Human Cloning (2005, UN), the EC – EU Directives 95/46 (on Data Protection), 2001/20 (on Clinical Trials), 2004/23, 2006/17 (on Human Biological Material's safety).

Regarding applications in other species: The Convention on Biological Diversity (Convention of Rio de Janeiro, 1992, UN) along with the Carthagena Protocol on Biosafety (2000), the Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes (1986, Council of Europe), the Convention for the Protection of Animals Kept for Farming Purposes (1976, Council of Europe), the Convention for the Protection of Animals for Slaughter (1979, Council of Europe), the EC - EU Directives 86/609 (on Laboratory Animals), 98/81 (on GM microorganisms), 2001/18 (on GM organisms), along with the relevant Regulations 1829, 1830/2003.

Regarding applications in all forms of life: The Universal Declaration on Bioethics and Human Rights (2005, UNESCO), the EU Directive 98/44 (on patents in biotechnology).

4 See, for example, such a limit in art. 40 of the French law on IVF (Loi n°2004-800 du 6 août 2004 relative à la bioéthique).

5 A good example, here, is the normative uncertainty regarding therapeutic cloning in humans, which is resulting from the wording of the Protocol on Cloning of the Oviedo Convention. Although human cloning sounds completely prohibited, according to art. 1, in the preamble it is noted: "some cloning techniques themselves may bring to scientific knowledge and its medical application". Yet it is not clear whether therapeutic cloning in humans, if possible in the future, will be accepted as such a "medical application" or it will remain prohibited anyway.

ulation is reasonable, since the efficacy of rules is depending upon rapid changes of scientific and technological data and technological applications, imposing a need for repeated revision of relevant provisions. Still, after an important international experience in legislation, we are now in place to refer to certain fundamental principles, and even instruments, that constitute the general framework of a legal approach in the field of biomedicine and biotechnology.

Starting from this point, is it possible to speak about the emergence of a particular branch in law and a respective legal doctrine as well? In the following I will argue that theoretically it is legitimate to adopt this view. Firstly, I will show the epistemological reasons that support this position, and secondly I will describe the main characteristics of biolaw as such a separate branch.

An Evolutionary Perspective: The Epistemology of Biolaw

For introducing the idea of a separate branch in law, it is necessary to explore whether its object is sufficiently determined both in the real world and the legal space (a). Furthermore it is necessary to explore the relations and limits of biolaw to existing legal branches, as it participates in different ways in their particular approaches (b).

The object of biolaw: management of life

Life in its general sense, as a complex phenomenon of the natural world, experiences nowadays multiple acts of management for various reasons. Life's management became important in our social life, as much as technology became able to understand and control vital functions and regularities, especially at the molecular level. The discovery of DNA's double helix in the early '50s and the first successful attempts of genetic engineering (recombined DNA), about twenty years later, are probably the most important landmarks in this process.

In that sense life may be considered also as something that, at least in part, lies in our autonomy, a complexity of biochemical reactions that we can use for conscious purposes. This fact raised serious ethical reservations demanding limits to available possibilities. The law was just the next step to conciliate the pace of progress with socially accepted values, as the rapid technological development and the growing interest of markets tend to contest such limits.

Despite the long debate about the better definition of "life" in biology[6], there is no doubt that living entities share a number of common characteristics. Above all, molecular research in biology support such an integrated approach of life, instead of approaches focused on species' particularities. The idea of a common origin of all life forms[7], including our own species, a core element in Darwin's evolutionary theory, is now much more stronger, if we pay attention to the discovery of important common parts in different genomes, after their successful mapping during the last years.

If the definition of "life" does not raise major problems of coherence, the term "management of life" should also be explored under the same view, in order to find out whether it is adequate for describing a new legal object.

A possible starting point for that is to include in this term conscious actions such as

- Medical interventions in humans intending to the restoration to health that may modify vital elements and functions by using drugs, surgery or other means of direct contact with the body. Transplantations of tissues and organs, as well as gene therapy intending to modify parts of the genome are also contained here.
- Medical interventions in humans, intending to the temporary or permanent enhancement of an organism's capabilities
- Biomedical research in humans in the context of clinical trials
- Medical acts intending to perform passive or active euthanasia or assisted suicide
- Medical interventions in the field of human reproduction (sterilization, contraception, abortion, assisted reproduction / insemination, IVF, surrogacy)
- Collection and use of human biological data. This comprises the management of medical data from physicians and health professionals (nurses etc) in usual diagnostic, preventive and therapeutic practice, genetic testing either for fertility purposes (PD, PGD) or performed in adults for preventive reasons, as well as DNA examination in forensics and use of biometrics for security reasons,

---

6 For an enlightening survey of this debate, see S. M. Potter, The Meaning of "Life" (1986), with relevant bibliography, available at: http://www.ibiblio.org/jstrout/uploading/potter_life.html.

7 See C. Woese, The Universal Ancestor, Proceedings of the National Academy of Science of the USA, 1998, p. 6854-6859, with further references, available at: http://www.pnas.org/cgi/content/full/95/12/6854

- Collection and use of human biological material for research
- Use of embryonic tissue for research
- Research in embryos in vivo and in vitro (especially use of embryonic stem cells)
- Experimentation with (especially vertebrate) animals
- Animal health care
- Research in transgenic and genetically modified animals (including hybrids and chimeras)
- Research in transgenic and genetically modified plants
- Research in genetically modified microorganisms
- Commercialization of living entities or biological material (including patenting)

Although the above description is not exhaustive, gives us a general picture of a broad object governed by already existing legal regulation.

Moreover this description may help in tracing the limits of life's "management". In that sense, as "management" should be understood exclusively acts that intervene directly in life's natural functions for achieving individual or social goals[8]. Other acts (for example scientific and technical acts that change inanimate natural things or functions, economic or political decisions that may change social life etc) may have also potential effects in life's natural functions, but only in an indirect way.

In the legal space, the "management of life" as a sufficiently distinct object of regulation and research seems to be also legitimate. Currently we know that not only an extensive debate in environmental ethics and policy[9] but also important instruments and judicial decisions promote at the legal level the value of life as such.

Starting, in particular, from the UNs' Convention on Biological Diversity (Convention of Rio de Janeiro), as a general instrument of international law recognizing the legal value of all life forms[10], we should include in this approach international and national legislation for the protection of various species[11] as well as the extensive corpus of instruments protecting the human life and the human biological material with regard to medical or research interventions.[12]

Is there a fundamental reason that supports life as a legal value? It is sufficient to accept the maintenance of the living Nature in general as a necessary condition for the existence of individual humans and humanity as a whole, to provide an affirmative answer to this question. Indeed, other living entities (microorganisms, plants, animals) contribute in many ways to the existence and welfare of human life. Vital functions of the human organism (respiration, nutrition), the preservation of human health, as well as important social activities (from urbanization and housing to economy, commerce, education etc) would not be even possible, without this participation of a surrounding living Nature. In legal terms, this means that respecting human dignity, protecting human rights and maintaining human communities, all presuppose life as a fundamental value with concrete legal effects.

A problem that may emerge here is whether an integrated approach of life underestimates accepted differences in value between the species, especially between humans and the other species. A long tradition in law speaks for a non-Darwinian world, where species are classified hierarchically, according given and permanent respective values, without "gray zones" of evolutionary relationship. In this picture, humans find themselves at the top of the pyramid, similarly to a creationistic representation.[13] The strong normative status of human dignity and human rights is not comparable to any meaning of "protection" for animals and plants. "Dignity" and "rights" pertain to the sole "subject" of law, which is the human "person", and the supreme value in law is that of legal "subjects".

8 Such acts are not only those intending to produce modifications in life's functions, but also acts collecting information for physical characteristics or physical capabilities, since that information may also serve individual or social goals. The knowledge and management of medical data for various purposes is the most common example here.

9 See, generally, S. R. Keller, The Value of Life. Biological Diversity and Human Society, Island Press, Shearwater Books, Washington DC 1996.

10 See art. 1 and art. 2 (defining the term "biological diversity").

11 In the field of international law such instruments are for example the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, Council of Europe 1979), the Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention, UN 1979) and the EC – EU Directives 92/43 ("on Natura 2000" networking programme), 79/409 (on wild birds).

12 See supra note 3.

13 See Chen, supra note 2, p. 1041.

Albeit this image provides very little help in questions about, for instance, the legal status of human embryos, or that of great apes (like gorillas or chimpanzees) in a research context[14], or about the commercialization of human tissues, it is important to note that differentiations in value between species are not incompatible with an integrated approach of life. Perhaps this last obligates us to justify better such variations, namely to use a more complex instrumentarium of legal principles than this of the traditional, absolute distinction between "subjects" and "objects" of law, but in any case it does not contravene the basic structure of the legal system, and the reasoning of its function.

In this view, human dignity and rights remain at the core of the legal analysis, but certainly not alone. Their interpretative approach and application in concrete circumstances cannot avoid an equal attention that should be paid to concepts such as the protection of biodiversity, the responsibilities towards future generations[15] or the precautionary principle[16], as these concepts play a more important role in regulating life's management.[17]

Crossing the objects of other branches

It is true that all the abovementioned legal instruments are already classified in various existing branches of law, particularly in the environmental and the medical law. In this way life is not addressed as an integrated phenomenon, it is perceived rather as a trivial feature of separate entities without concrete normative sense.

More specifically, the interests of environmental law focus on human interventions in Nature as a whole, whether living or inanimate. The main point here is to establish reasonable balances between Nature and social life, considering the first as a more or less "static" factor needing adequate protection. On the other hand, medical law has as specific interest the doctor/patient relationship. Medical acts certainly fall into the wider concept of life's management, yet the point of medical law is that such acts are interesting because they are intending to the preservation of patients' health and welfare. It is this particular scope that characterizes the approach of medical law, whether it explores medical liability or malpractice or focuses on the organization of a health system. In a general sense we may consider that medical law also addresses issues of preservation and care for existing life forms.

Yet, under this view (assumed as common for both branches) it is difficult to tackle problems such as, for example, the classification of legal provisions regarding research with human biological material, genetic engineering, creation of hybrids and chimeras (even with human material), or regarding a potential regulation of synthetic biology. In all these topics, the approaches of environmental or of medical law are rather narrow to provide coherent legal solutions, given that they focus mostly on the conservation of existing life forms and not on life alterations. In this respect a perception of life as a particular value that unifies all its potential forms, already existing and future, implying not a "static" but a "dynamic" concept of life's elements and functions, is proved necessary.

Certainly biolaw has also common interests with medical and environmental law. Successful research regarding organisms' functions, even modifications of existing forms of life become crucial when addressing the problem of the environmental protection (the examples of GMs are the most characteristic here). The same should be stressed for medical innovations as well, since biomedicine produces currently substantive changes to the doctor/patient relationships.[18] Hence, a close communication between the three branches will guarantee, in particular, important "inputs" for promoting legal research with regard to the specific object of each one also.

The main characteristics of biolaw

A description of biolaw's main characteristics would facilitate a more thorough investigation under the view of a supposed new branch in law.

14 Comparing particularly to the research in children or persons unable to consent.

15 See, generally, the UNESCO's Declaration on the Responsibilities of the Present Generations Towards Future Generations (1997) and C. Chong, Restoring the Rights of Future Generations, International Journal of Green Economics 1 (1/2) 2006, p. 103 - 120.

16 See, generally, COMEST, The Precautionary Principle, ed. UNESCO, Paris 2005.

17 Good examples, here, are the Convention of Rio de Janeiro and the EU legislation on GMs.

18 Especially regarding an increasing need for accurate and adequate information of patients on multiple novel available means of treatment. Evidence-based medicine stresses this point in particular.

In this respect it is interesting to show, firstly, the occurrence of relevant rules in almost every known branch of law. Secondly, there are some characteristics that may affect the efficiency of biolaw's rules, namely the regulation of life's management as a practical perspective.

"Colonies" of biolaw in other branches of law

Rules of biolaw are now present both in public and in private law. More specifically:

In the context of public law, there are rules that establish balances in situations of confrontation between fundamental rights (such as between the right to privacy and the freedom of research, in the field of genetic data management).[19] Others set limits to the exercise of rights in order to preserve fundamental principles of the legal system (for example, limits to the freedom of research for preserving the principle of human dignity, in the context of biomedical interventions[20], or limits to the economic freedom, for the sake of the environmental protection, in the field of the management and commercial exploitation of GMOs[21]). In that sense, such rules pertain to the constitutional law, particularly to the study of constitutional rights.

There are also rules intending to the general regulation of issues that emerge at a global level, beyond national limitations and national legal systems. In their progress biomedicine and biotechnology do not recognize geographical boundaries, therefore the scope of such rules is to control, as far as possible, globalized developments in life sciences and technology. For that reason they are contained in international instruments of binding or "soft law" nature, in the wider field of international law.[22]

In several circumstances, according to procedural rules of biolaw, the State is involved as the guardian of implementation of other substantive rules on life's management. Preventive and coercive controls are included here (i.e. licensing, administrative sanctions) for research institutions[23], enterprises[24] and individuals[25] performing biological applications. Such procedural rules pertain to the administrative law.

Furthermore, substantive rules of biolaw regulate issues of intense ethical importance and, for that reason, they describe specific crimes and provide relevant penal sanctions. This is usually the case of abortion[26], assisted reproduction[27], transplantations[28] etc. Rules of that kind are interesting for the criminal law.

In the context of private law, the emergence of biolaw is equally important. It should be noted, here, that most of its rules regulate private relations, governed by the principle of the freedom of will, without the presence of State's authority. It is true that, in such relations, sometimes the position of one of the parts becomes dominant in practice (as in the case of the doctor comparing to the patient's position, or in that of a pharmaceutical company comparing to the consumers' position). However, in general, the starting point is the freedom of will, which is the core of classic civil law, particularly of the law of personality[29].

There are also rules addressing extensively issues of industrial property, especially regarding patenting of biotechnological innovations, issues that affect directly the orientation and developments of research in life sciences.[30] In that sense, such rules are included to the commercial law (especially to the patent law).

19 See, for example, art. 7 par. 2 (f) of the Greek Data Protection Act (2472/1997), stating that "processing [of sensitive personal data] is carried out exclusively for research and scientific purposes provided that anonymity is maintained and all necessary measures for the protection of the persons involved are taken".

20 See art. 16 of the Oviedo Convention.

21 See art. 4, 13, 14 of Directive 2001/18.

22 See, supra note 3.

23 See art. 11, 12 of the Greek Act 3305/2005 on assisted reproduction, requiring from research institutions to be licensed by the independent authority on assisted reproduction, for performing research in embryos in vitro or in vivo.

24 See art. 16 of the same Act (ibid) regarding the establishment of fertility clinics.

25 See art. 10 of the same Act (ibid) regarding the performance of PGD that should be licensed by the same authority as well and art. 27 on administrative sanctions imposed to individuals for illegal activities in the field of assisted reproduction.

26 See art. 304 of the Greek Penal Code.

27 See art. 26 of the above mentioned Greek Act 3305/2005 on assisted reproduction..

28 See art. 20 of the Greek Act 2737/1999 on transplantations.

29 Informed consent of patients or personal data subjects is the most characteristic expression of this freedom. See art. 5 of the Oviedo Convention and art. 2 h of Directive 95/46 respectively.

30 Since patents, representing a commercial privilege in markets, function as a motive for funding research in edge technologies that involve important risks of failure.

Other rules of biolaw may determine the conclusion of employment[31] and insurance[32] contracts (since they regulate, for example, the collection and use of medical data, as specific requirements for such contracts), therefore they participate in the field of labor and insurance law respectively.

The above description of biolaw's "colonies" in established branches of law makes even stronger the need for an integrated approach of life's management. As the specific views and the dominant legal principles differ between public and private law and between their various branches as well[33], it seems difficult to extract coherent legal solutions without using a combined legal knowledge, that is, not limited to the context of a particular branch, regarding such complex issues.

For instance, it is difficult to conclude whether it is possible to patent treatment methods based on the exploitation of embryonic stem cells that involve the destruction of human embryos[34], without a "holistic" understanding of human dignity that combines the relevant approaches of commercial, civil, criminal, constitutional and international law. Similarly it is hard to decide whether a physician may be prosecuted for executing an informal advance directive[35] of a patient demanding passive euthanasia, without a joint approach of human dignity, referring to the particular aspects of civil, criminal, constitutional and international law. And, furthermore, even a "holistic" understanding of human dignity must afford extreme innovations in research involving mixtures of human biological material with that of other species, especially a mixture of respective genomes in cases of hybrids and chimeras[36]: Apparently, an understanding of human life as "isolated" value in the legal space cannot support such an approach.

Characteristics affecting the efficacy of rules

From a practical view, the possibility for the existing rules of biolaw to produce real effects in the overall progress of biomedicine and biotechnology, that is, to conciliate this progress with moral and social values encompassed in the legal system, is depending on some additional characteristics.

Firstly, as already noted, biolaw remains for the time being a statutory law. Legislators produce specific instruments in an effort to meet sometimes excessive social concerns, but this does not guarantee efficacy in regulation. Still there are fields that indicate a certain social influence of biolaw. Assisted reproduction, regarding especially the administrative control of State authorities[37], case-law on passive euthanasia[38], assisted suicide[39], and the legal status of human embryo[40], case law on GMs[41] and a number of famous decisions produced by patent offices and courts in Europe and the US on biotechnological innovations[42], are some examples for evaluating that influence. Yet we can expect that the efficacy of biolaw will be tested particularly in the field of medical liability and malpractice, as long as innovative diagnostic, preventive and therapeutic means will be introduced in medicine. The same can be said for innovations emerging from the management of animal and plant biological material, with regard to safety precautions.

Secondly, it is worth mentioning the contribution of the consultative role of ethics committees at various levels (international, national, local), whether in the preparation or in the concrete implementation of rules. As courts play at the moment a limited role in the development of bio-

31 See, for example, art. 10, 27 of the Greek Act 1568/1985 regulating the collection and use of medical data in the workplace.

32 See, for example, T. I of the recent Genetic Information Nondiscrimination Act (GINA) in the U.S.

33 See also Chen, ibid. note 2, p. 1031 – 1035.

34 See ad hoc, art. 5 of Directive 98/44.

35 See art. 9 of the Oviedo Convention. The term "informal" indicates an advance directive that may be formulated despite the lack of relevant national regulation.

36 Such experiments may intend to therapeutic purposes (as an alternative to the research in embryonic stem cells). The creation of "cybrids" with human material, after approval from the Human Fertilization and Embryology Authority (HFEA) in the UK, is the most known example here. From an ethical aspect see J. S. Robert – F. Baylis, Crossing Species Boundaries, The American Journal of Bioethics 3 (3) 2003, p. 1 – 13.

37 A good example, here, is the remarkable efficiency that shows the HFEA in controlling assisted reproduction in the United Kingdom, for almost two decades.

38 See esp. cases such as In re Quinlan, 355 A2D 647 (N.J. 1976), In re Conroy, 486 A2D 1209 (N.J. 1985), Cruzan v. Director, Missouri Department of Health, 497 U.S. 261 (1990) from the U.S. case-law.

39 See the recent cases (2008) of D. James in the UK and E. Englaro in Italy and the well-known Pretty v. UK case (ECHR, 2002).

40 See Vo v. France (ECHR, 2004).

41 Especially from the EU's European Court of Justice (Luxembourg).

42 Decisions on Chakrabarty case, "Harvard oncomouse", BRCA 1and 2 etc.

law[43], this "non-binding" work of expert bodies enriches substantively the normative equipment, permitting a much more accurate knowledge of scientific and technical data, suggesting more adapted in these data interpretations of existing rules and, consequently, promising a more effective control of relevant practices. Comparing to other branches in law, in biolaw the role of such bodies is exceptionally important, being very close to the function of an "official interpreter" of rules, a role that administrators and courts can difficultly ignore.

Thirdly, and perhaps most importantly, the efficacy of rules is always contested by the globalized and rapid progress in life sciences and technology. With no doubt this problem may lead rules (especially the national ones) to fall eventually into disuse. It seems that too rigid such rules, intending to impose absolute moral convictions with severe coercions is more likely to be proved of a weak efficacy at last. On the contrary, "permissive" rules proposing a general framework under which acts of life's management are acceptable (and, moreover, even socially desirable) may be proved more efficient in regulation, in the sense that they discourage unacceptable practices not by sanctioning but by promoting others. In this reasoning biolaw pays more attention to its "educative" role with respect to social values, which is crucial for issues of an ethically sensitive nature.

Conclusion

Crucial discoveries of biological research at the molecular level of organisms have shown a common ground and origin of life as a natural phenomenon, confirming eventually the Darwinian evolutionary approach. Recent developments in biotechnology, especially the ongoing progress of genetic engineering and synthetic biology, have been based on this fact and proceed to various interventions in genomes, producing completely novel life forms, and thus making life widely "manageable".

On the other hand, a clear tendency of modern law is to attribute a certain value to living entities, acknowledging their importance for human societies, a value that distinguish them from inanimate natural things. In that sense law seems to accept, also, a common normative ground for all life forms.

Both the above remarks support an approach of life as an integrated natural phenomenon; consequently they promote an integrated analysis of every possible form of life's management, which is interesting from a legal point of view in particular. Such an analysis should comprise not only interventions in the biological composition of humans, animals, plants and microorganisms, but also the collection and use of biological information for various purposes (environmental, medical, social etc).

Relatively frequent uses of the term «biolaw» in relevant legal studies show that gradually, a new, distinct branch of law cover this field, presently focusing mainly on issues related to biotechnological innovative practices. In this paper I tried to explain why it is legitimate to expand further the interests of biolaw, meeting (but not overlapping) those of medical and environmental law.

Biolaw, as the study of life's management, will continue to focus especially on "exceptional" questions, the number of which is permanently increased following the progress of modern technology. The practical problem that should be avoided (and progressively it becomes more pressing) is to leave such questions without consistent and coherent normative solutions. For this effort a major overturning in the general structure of legal systems is by no means necessary. However, it is time to introduce the main points of the contemporary evolutionary thought even in law, not for celebrating the Darwin's bicentenary but simply for improving our ability to understand and regulate a world in motion.

43 For the role of judges in biolaw, see, generally, the issue 1 – 2 (vol. 17, 2006) of the Journal International de Bioéthique, esp. J. Michaud, De la procédure bioéthique: Expérience judiciaire, pratique des comités (p. 61 – 68.), where a specific jurisdiction is proposed for bioethics cases.