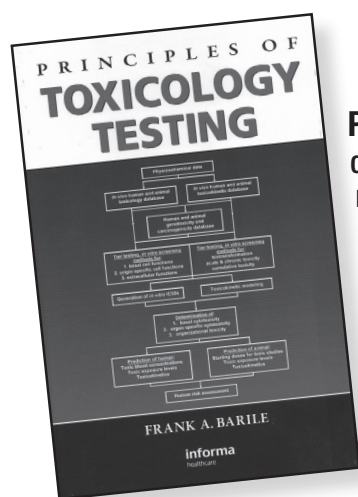


BOOK REVIEWS, NOTES AND COMMENTS

Edited by
Federica Napolitani Cheyne



**PRINCIPLES
 OF TOXICOLOGY TESTING**

Frank A. Barile.
 New York: Informa Healthcare;
 2008. 312 p.
 ISBN 0-8493-9025-7.
 \$ 130.00.

Toxicology is a rather emerging and lively discipline in these last years, when the global reset of economy is rendering old-fashioned most of the classical study areas in biomedicine and applied chemistry. In fact, primarily for its role in protecting human and animal health (for the latter, more in the case of farm and pet animals than for wild species), toxicology is vividly depicted by most of the media. Both rich and poor countries are regularly involved in debates dealing with a variety of toxicants.

However eco-toxicology and more in general environmental sciences grow of importance every day. The sudden disappearance of animal populations (both invertebrates and vertebrates, for the latter see [1]) represents a warning for the presence of dispersed contaminants, which inhibit the reproductive success of a given animal species, and are a potential hazard for local human populations.

This book is definitely a textbook, for the way it is arranged and structured. Also its internal structure, with short paragraphs, summaries, suggested readings and review articles, aims at covering the widest range of general toxicology.

Starting from basic concepts in toxicology testing (noticeable forensic toxicology and idiosyncratic reactions), it embeds twelve paragraphs under the label *Exposure*, all concisely, yet very efficaciously, presented.

After *Toxicokinetics*, *Risk Assessment* and *Regulatory Toxicology* chapters, the book touches delicate and ever-changing themes. The fifth chapter, *Descriptive animal toxicology tests*, is of para-

mount importance, since it includes a few brief considerations of animal welfare, housing and standard maintenance. Its suggested readings and review articles are very well selected; however a longer chapter would have been desirable, given the relevance of toxicological studies and regulatory tests involving animals. In particular this chapter, yet enlisting the most essential topics and including environmental enrichment of laboratory mammals, in the final reference list forgets to mention the presence and overall “evolving” regulatory rules. In particular we refer to the pending European Union Directive for the future situation for *in vivo* testing on vertebrates and possibly a few, highly selected, invertebrates species [2]. These themes could hopefully be added to the next edition of this textbook, mainly for its editorial success at European level.

Chapters 6 (*Acute Toxicology Testing*), 7 (*Subchronic and Chronic Toxicology Testing*), 8 (*Acute Dermal and Ocular Toxicity Testing*) and 9 (*Toxicity Testing for Fertility and Reproduction*) are all concisely, yet fluently, exposed. Overall, they provide a balanced overview of these basic toxicology matters. The paragraphs 8.3.2. (*Objections to and Limitations of Eye Irritation and Corrosion Testing*) is a reliable picture of an historical debate on animal testing reduction. It could be subsequently expanded, *e.g.* by quoting a few references narrating the various steps in its application and successive decline.

The tenth chapter (*Carcinogenicity and Mutagenicity Testing in Vivo*) witnesses of minor and major perfecting of *in vivo* testing. Ecotoxicology is disregarded in some way here, but paragraph 10.5.6.2 underlines the *Tier Testing* strategy which has achieved more and more national, sovranational, international and global consensus toward unified testing methodologies. It needs in fact to be remembered that toxicology allows circulation of products, foods, synthetically man-made chemicals, etc. Therefore its socio-economic relevance in terms of products exchange shapes the entire field. Noticeably animal testing and its modifications in the framework of OECD activities has been a frontline topic in the recent past [3].

In vitro studies, high-throughput screening and microarrays analysis, experimental design statistics, provide the reader with the basis of these methodological matters for toxicology studies in

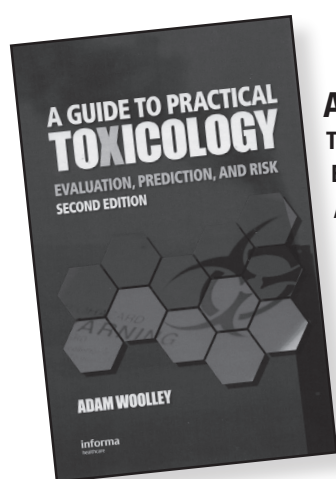
general. In that, the book represents a profitable text for university students. The last two chapters are interestingly devoted to alternative methods, a hot contemporary issue making this book a non-partisan stakeholder very useful in times of contrasting opinions, particularly in Europe and Japan. In particular paragraphs 19.2.2.1 (*Relevance and Reliability*), 19.3.1 (*History*) and 19.3.2 (*Advantages of Organized Multilaboratory Validation Programs*) and overall paragraph 20.1.3 (*Establishment of International Efforts for Development of Alternative Methods*) deserve to be read and pondered.

In general this Frank A. Barile's (Associate professor active in the New York area) opus is useful for toxicologists, biomedical scientists dealing with regulatory activities, committed veterinarians and decision-makers in the field of biotech SME. We suggest to biomedical libraries and translating publishing houses to seriously take it into consideration.

References

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A GUIDE TO PRACTICAL TOXICOLOGY
Evaluation, prediction, and risk
Adam Woolley.
New York, London: Informa Healthcare; 2008. 2. ed.
472 p.
ISBN: 978-1-4200-4314-3.
€ 63.00.

This book is a general toxicology guide, aimed to elucidating the most practical principles of this socially important and emerging discipline.

The new wealthy economies of the BRIC countries and, somehow more exhaustive, the Eastern Europe zones where heavily planned industry provoked en-

vironmental dispersion of risky pollutants do need to have neurotoxicology and, in particular, ecotoxicology as a priority. In these latter cases epidemiological and ecotoxicological data sets collected on humans and animal inhabitants of Eastern Europe zones and compared with Western areas, are producing and will hopefully produce important considerations to both rescue contaminated zones and to prevent further exposures to living organisms either entering or not entering human food chain.

This book is a second edition. Citing the words of the author Adam Woolley, he “felt that there was a need for a practical user-friendly introductory text for those coming to toxicology from related fields or professions (.....)” and “the book should be informative but readable and should also act as a gateway to the subject, indicating where further information can be found, including the use of websites for literature searches and other areas, such as regulations and guidelines.” It is in fact a condensed yet vivacious collection of basic principles and most of the relevant topics of the general and applied toxicology disciplines.

It is worth noting the regular use of inserted Boxes, mostly providing information of specific cases, testing systems, data sets and summarized lists of principles: they usually fertilize this book making it definitely more than a simple text book for students or interested professionals.

The first three chapters include most of the basic principles of toxicology sciences; however paragraphs on natural medicine and poisons, important critical reflections on “it is natural so it must be safe” – everyday toxicological conundrum, ethics of toxicological assessments, the delicate and hot issue of the three Rs (Reduce, Refine and Replace animals in toxicological assessments) all make the narration spicy. For the *Definition and Maintenance of Normality* it includes paragraphs on control group as normality and baseline data and historical control, both somehow challenging old-fashioned (yet still currently taught) principles.

Chapters 4-8, the core part on practical toxicology, regard *Determination of Toxicity (In Vitro and Alternatives)*, *Safety Pharmacology* (with paragraphs on test systems and safety pharmacology in toxicity studies) and *Determination (General and Reproductive Toxicology, Genotoxicity and Carcinogenicity, Dermal Toxicity, Sensitization, Irritation and Corrosion)*. The book is disseminated with final “warning paragraphs” on pitfalls in most of the current point of view.

Chapter 9 *Determination: Environmental Toxicology and Ecotoxicology* is nicely constructed; however the level of condensation may dissatisfy delicate ecotoxicological palates such as ours.

We attempted several years ago, at least for toxicants acting on the nervous system of both vertebrate and invertebrate animals, to establish naturalistic and semi-naturalistic settings to reproduce real-world exposure(s) to environmental toxicants [1].

The journal *Ecotoxicology* [2], as well as many scattered papers, exploits wild or harmed animal tissues to measure actual levels of contamination while attempting to make the rout of exposure and precise toxic agents responsible for brain/behavioral alterations. We exploited carcasses of birds and mammals dead as a result of car accidents to evaluate contamination level in central-Italy ecosystems with particular references to top predators as natural biomagnifiers for selected pollutants [3]. Again more emphasis on other major changes in biodiversity of fragile ecosystem caused by environmental pollutants or more details on food webs, including the human species, could be recommended for a third edition.

The following chapters, 10-16, touch interpretation of basic principles and different data types (*Morphological Pathology, Reproductive Toxicology, Genotoxicity, Carcinogenicity*), hazard prediction, *Background to Risk due to Toxicity, Risk Assessment in Practice and Setting Exposure Limits, Risk Assessment and Management in the Workplace* and an overview of risk assessment, with notes about carcinogenicity, environment and its evolution. They are all well arranged and provide intelligently a few selected references. Despite the considerable efforts of the author, this book as most of the available toxicology text books does not take enough into account data coming from epidemiology and, over all, medical anthropology. In fact the social and culture traditions, mostly local, are embedded in the actual risk of exposure to food and/or environmental conditions. Man-made “artificial chemicals” are absorbed, eaten, drunk, injected, etc. according to precise social rules. Realistic and efficacious prevention analyses rely on medical anthropology schemes, having to cope with individual lifestyles, a major problem in today biomedicine, which includes medical and forensic toxicology.

Chapter 17 is a very important one since it is aimed to disentangling the pros and cons in evaluating of specific classes of chemicals. Initiated by “*Regulatory Influences paragraphs*”, it includes *Human and Veterinary Pharmaceutical, Medical Devices, Agrochemicals/Plant Protection Products, Biocides, Cosmetics* and *General and Industrial Chemicals (Reach-test)*. This represents a nice taxonomy of the main toxicants. However despite this rather complete overview, the reader should be advised that the list will inevitably grow, also because of the social-economic reset of the last years.

The last chapter (*The Future of Toxicity Testing and Risk Assessment*) is of course a questionable futuristic “pre- perspective”, attempting to trace a guideline of the values creeks in which toxicology will flow in the near or distant future. We mostly agree with the author, particularly about the use of in vivo tests to protect human health for many years to come.

In sum, this book is warmly recommended for the scaffold of toxicologist-to-be, for the senior toxicologist needy of endless amelioration, for the

veterinarians, the professionals in regulatory issues both from the private and public side, or the general medical and biomedical audience interested in understanding where practical toxicology is presently arrived.

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L'ETICA DI FINE VITA

Fabrizio Turollo.
 Roma: Città Nuova;
 2010. 90 p.
 ISBN 978-88-311-0165-3.
 € 10,00.

In this work, Fabrizio Turollo criticizes what he calls “medical reductionism”, a perspective in which medicine can incur when it considers the organism instead of the person, such as the illness instead of the patient. Turollo’s research works into the area concerning the end of life: referring to this field, the “medical reductionism” is refused as the equivalence that it establishes between the person and its measurable aspects. There is a widespread perception about scientific progress; this generates a sort of optimism in doctors. Looking at scientific results, doctors are allowed to see equivalence between pure science and medicine.

We need to look beyond. In this book, the author points out that scientific medicine, although its results, can not say the last word about health. The primary reason is that, while contemporary medicine has provided insights into the structure of the human body, producing successful perspectives never seen before, hard questions remain about its goals, but also about how to deal with situations without recovery.

Turoldo asks to support the perspective he calls *to cure* – cure in a merely technical way – with *to care*. In this expression, the author suggests a holistic approach to the patient. The empathy must be considered as the global comprehension of the person; in this situation, benefits must be measured considering also the patient's thoughts about his conditions, how he looks at his future and also the relations he is able to draw with the family and friends. Kantian dignity, focused on the absolute value of the person, allows the author to reject various limitations connected to objective models in treating patients.

The ever increasing power of modern medicine and the complex setting in which it is practiced, raise new ethical questions concerning what is good in doctor's behaviour and patient's claims.

Bioethics has historically investigated more the question if there is a right to die (euthanasia) than the question *how* to die (palliative care and care of the terminal ill patient), indeed the author suggests to balance these two ethical domains. "Ethics of care" and "gender studies" converge in including empathy among doctors' tasks. The whole key concept of empathy is the capacity to recognize and share feelings that are being experienced by another sentient being; in this case, empathy means the ability that doctors should have to assume the emotional point of view of other people. Turoldo recalls that in Greek mythology the concept of empathy is highlighted by the myth of Chiron. Chiron was a centaur that had been poisoned with an arrow; this condition of suffering, which was incurable, allowed Chiron to recognize both the pain and emotional sphere of patients. The main point in addressing empathy is the circumstance that the doctor, following the example of Chiron, is close to patient's suffering, but not identified with him. So empathy means, at the same time, emotive nearness and distance: a complete identification between doctor and patient makes the doctor incapable of a medical correct reasoning. The author rather shows the need of a permanent learning, he wants to increase the understanding of the staff impact into the hospital, pointing out aspects like comparison and co-operation – even if, obviously, each staff member has his own functions.

The author parallels two versions of illness. One version is referring just to the organism; here the organism stops doing its work, so health becomes the capability to bring back the organism to the precedent condition. The other version is, following Turoldo's, to broaden the concept of illness, considering health not just as a working organism, which looks like a clock or generally like a machine, because this means lacking the sphere of the emotive dimensions of the illness.

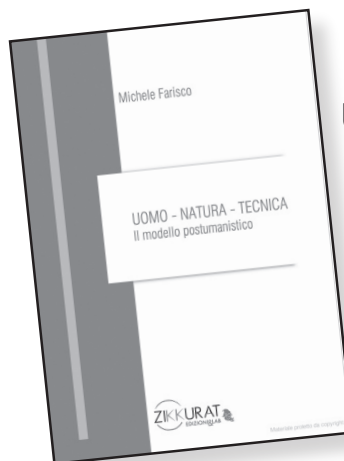
The perception of time is a clear example of this emotive dimension: time for the patient does not flow in a uniformed way. Faster or slower, illness time is not neuter, always accompanied by patient's hope or fear. Turoldo demonstrates the importance of the role of telling stories; here we can find another meaning of cure: now the cure is the capability by the patient

to tell his own history; if a fracture comes with the illness, drawing a line between the previous daily condition and the new unexpected one, the health comes back also removing this furrow being that the narration is able to create between the past with the present. There are also medical conditions where there is a void of the verbal channel: but that does not mean there is no channel. What the author is searching now is a non-verbal communication channel, based on the model of the relation between mother and newborn child. The mother establishes a connection with the newborn using channels like her touch or sound of voice. So this behaviour concerning the beginning of life could be used to address, at the same time, the end of life. Following this way, Turoldo talks about a type of memory that could sound unusual, an unconnected words memory or even with the capability of language: an affective-memory. The theoretical image of a man derived from these arguments can not separate the biographical level from the biological level. Turoldo says that the philosophical concept of human being, once we consider these procedures of non verbal communication, sees "biology" and "biography" as deeply related.

It is quite common for philosophers to argue that there is an equivalence between autonomy and rationality. Under a less strict formulation of autonomy there is instead a wide range of behaviours, all of them are equally autonomous; here, there are no gradations between real autonomy and its imperfect forms.

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UOMO-NATURA-TECNICA

Il modello postumanistico

Michele Farisco.
Roma, Teramo, Senigallia:
Zikkurat Edizioni&Lab;
2009. 94 p.

€ 15.00.

In the contemporary world the connection between human being and technology is so close that it is quite impossible to imagine our life without the help of technical products that make our existence easier and more enjoyable, although sometimes more uncertain and even dangerous.

The relationship between humankind and technology is not simply an extrinsic link between two autonomous and independent elements, but rather a *symbiosis*, that is a necessary relationship which is increasingly changing our subjective identity. Actually some thinkers, mainly English and American, speak about the overcoming of the concept of humanity as it has been understood until now, affirming that the human is overcome by the post-human, a new subject of evolution that has a so close relationship with technology to be no longer conceivable as a man in the classic and humanistic sense of the word.

In other words, the extraordinary development of technology is increasingly becoming an “hybridization”, that is a symbiosis, an interbreeding between technology and human, and according to some interpreters from this merging the posthuman is born. Today technology is no more conceived as an element out of human, but it is increasingly going inside him, particularly inside his body (take as an example the transplantation with biocompatible artificial implants, or the application of instruments that allow a man to live, like the pacemaker, or even the increasing phenomenon of “cognitive enhancement” through chemicals), creating an interbreeding which surely problematizes the humanistic view of human being as an autonomous, strong and definite subject, who does not need anyone nor anything else to be himself.

In the present book Michele Farisco, after an historical introduction to the posthuman philosophy, tries to argue that, during his evolution, the human being has always been contaminated with others, with other humans but also with animals and artifacts: the technological posthuman is not a new species after human, but a radicalization of what human has always been. Another thesis of the book is that the capability to “create” technology is

a totally “natural” human quality, so that the dichotomy nature-culture needs to be rethought.

This means that in a certain sense human has always been posthuman, that is a subject of (physical, cognitive and moral) hybridization with what is out of human, and the human being has always been a technological being. Nonetheless, as Farisco points out, the contemporary technological development raises as critical the issue of its ethical and political (in the Aristotelian sense of management by the community) assessment, because it is necessary to clarify at social and civil level the limits of a “sustainable development” in order to avoid the risks of an anti-human development of technology.

As the author says, the present book aims to be a contribution to the philosophical reflection about the aforementioned issues, trying to offer, instead of definitive answers, a clarification of the emerging questions: before an adequate answer it is necessary to clarify the questions to answer. The core point to take in mind is that the problems emerging from the posthuman view regard the present of man, and describe transformations that are already in progress and that involve us all, willingly or unwillingly.

In this sense the book by Farisco is a very interesting work about the specific issue of technology in posthuman perspective: it offers a wide and articulated reflection about the most important thinkers in the world, avoiding the two extremes of technophobia and technophilia. In conclusion, the proposal by Farisco is a balanced attitude toward technology: it is good that man does, or better *is* technology, but it is also an ethical and political duty to clarify the *limits* of such doing and the conditions for such a being not to become a *no-more-being*.

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