

# The Precautionary Principle and the ethical foundations of the radiation protection system

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The moral philosophy underlying the recommendations of the International Commission of Radiological Protection (ICRP) is not always made explicit.

Elements of utilitarian and deontological ethics, sometimes of virtue ethics have been identified.

These moral theories are usually considered to be incompatible, because they are based on different priorities, e.g. usefulness or universalizability.

Is it at all appropriate in a more and more globalized world to base the recommendations of an international advisory body such as ICRP on particular theories of “Western” ethics?

<b>World Region</b>	<b>Population (2006, estimated)</b>	<b>Population % of total</b>
Africa	915 million	14.1 %
Asia	3,668 million	56.4 %
Europe	807 million	12.4 %
Middle East	190 million	2.9 %
North America	331 million	5.1 %
Latin America / Caribbean	554 million	8.5 %
Australia / Oceania	34 million	0.5 %
<b>WORLD TOTAL</b>	<b>6,500 million</b>	<b>100.0 %</b>

<b>Religion</b>	<b>Followers (2006, estimated)</b>	<b>Followers % of total</b>
Christianity	2,100 million	41.2 %
Islam	1,300 million	25.5 %
Hinduism	900 million	17.6 %
Chinese Traditional Religions	400 million	7.8 %
Buddhism	380 million	7.5 %
Judaism	14 million	0.28 %
Baha'i Faith	7 million	0.14 %
WORLD TOTAL	5,100 million	100.0 %

(1)

Ethics in the world today cannot be  
exclusively “Western” ethics

Do different cultures have fundamentally different approaches to moral questions, or is there something like a “common morality”?

One of the most widely used frameworks of biomedical ethics is the one developed by Beauchamp and Childress (1979).

It is based on four principles

- 1) Autonomy
- 2) Non-Maleficence
- 3) Beneficence
- 4) Justice

These are assumed to be rooted in a “common morality”, which is “not relative to cultures or individuals, because it transcends both”.

Originally, Beauchamp and Childress were not speaking about different cultures. They were just trying to find middle-level principles that the former as a utilitarian and the latter as a deontologist would be able to agree on without referring to one single, more fundamental principle, such as usefulness or universalizability.

The four principles have *prima facie* validity, which means that they apply as long as there is no conflict between them. If there is, they need “balancing”.

The principles also need “specification” in order to apply them in different contexts.

How to do all this is the matter of long discussions in Beauchamp and Childress’ book.

(2)

The approach of Beauchamp and Childress could become a model for radiation protection ethics, which means we should try and identify relevant principles in the “common morality”

My own approach differs from the one proposed by Beauchamp and Childress in two aspects:

- how we find the underlying principles of the “common morality”, and
- how we “balance” the principles and “specify” them in different contexts.

Beauchamp and Childress are not really interested in the sources of the “common morality”. They just claim that “all persons committed to morality” would agree with their four principles.

In my view, fundamental orientation has been provided throughout the ages by the written and oral traditions of the different cultures, and these continue to be of great influence, especially but not exclusively for people not versed in “Western” secular philosophy.

Fundamental documents for the construction of a “common morality” are therefore the Holy Writings of the world’s great religions, documents produced by way of intra- and interreligious dialogue, time honoured philosophical works such as those of Confucius or Aristotle, as well as the oral traditions of indigenous peoples.

(3)

The „common morality“ cannot be found by a universal „opinion poll“, but by study of the written and oral traditions which have guided people of different cultures over the ages.

Beauchamp and Childress suggest that the principles found in the “common morality” are the anchoring points of a process approaching a “reflective equilibrium”.

In my view, we cannot construct “cross-cultural ethics” without understanding what those principles actually mean in other cultures, how they are “balanced” and “specified” in everyday life. And this we will find out only if we talk to each other across cultural borders.



(4)

Discourse is needed to develop  
„common morality“  
into cross-cultural ethics.

Can the principles of radiation protection be related to those  
found in the “common morality”?

Assuming that the principles of biomedical ethics proposed  
by Beauchamp and Childress are indeed part of the  
“common morality”, can they be of use in the context of  
radiation protection?

Justification - Any decision that alters the radiation exposure situation should do more good than harm.

Optimization - The likelihood of exposure, the number of people exposed and the magnitude of their individual doses shall be kept as low as reasonably achievable, taking into account economic and societal factors.

seem to be related to Non-Maleficence and Beneficence

Application of dose limits: The total dose to any individual from regulated sources in planned exposure situations other than medical exposure of patients should not exceed the limits specified by the Commission

seems to be related to Autonomy and Justice

(5)

The three basic principles of radiation protection – justification, optimization, dose limitation – can be related to the four principles of biomedical ethics, which in turn can be traced back to the “common morality”

Could the “common morality” provide guidance on other questions, which are not covered by justification, optimization and dose limitation?

Example 1: Unequal distribution of profits and burden, i.e. the good is provided preferentially to one group of individuals and the harm to another.

A principle of relevance here, which is found in religious and philosophical traditions around the world, is that special attention must be given to the underprivileged.

(Compare John Rawls' "Theory of Justice": "Social and economic inequalities are to be arranged so that they are of the greatest benefit to the least-advantaged members of society".)

Example 2: How can we take into account the risks for future generations?

In this case, the relevant principle supported by a wide cross-cultural agreement is intergenerational equity.

(Different models have been proposed, some of them suggesting a discount rate approach in which future good and harm count less than prompt consequences, but the International Atomic Energy Authority has stated that, „Radioactive waste shall be managed in such a way that it will not impose undue burdens on future generations.“)

Example 3: How to deal with risks for which there is no direct evidence?

Here we finally come to the  
Precautionary Principle:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

(Wingspread Conference on the Precautionary Principle,  
January 26, 1998)

Other versions of the Precautionary Principle:

1982: World Charter for Nature

Activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; ... where potential adverse effects are not fully understood, activities should not proceed.

1992: Earth Summit in Rio de Janeiro

Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Other versions of the Precautionary Principle:

2000: European Commission

The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern...

2005: World Commission on the Ethics of Scientific Knowledge and Technology

When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid and diminish that harm.

Cross-cultural agreement on the Precautionary Principle?

The prudent see danger and take refuge, but the simple keep going and pay the penalty.

Proverbs 22:3

Act like a person in fear before the cause of fear actually presents itself.

Mahabharata 12:138

The cautious seldom err.  
Confucius, Analects 15:11

Trust in God, and bind your camel.  
Muhammad, Oral tradition

## Cross-cultural agreement on the Precautionary Principle?

When big things are at stake, the danger of the error is great. Therefore, many should discuss and clarify the matter together, so the correct way may be found.

Shotoku Taishi, Buddhist Regent of Japan

We endorse the "Precautionary Principle" as a primary guide... We believe that it is a discipline consistent with our Christian calling as stewards of creation and advocates of economic and social justice.

North Dakota Conference of Churches

## Cross-cultural agreement on the Precautionary Principle?

Over the past 60,000 years we, the indigenous people of the world, have successfully managed our natural environment to provide for our cultural and physical needs. We have no need to study the non-indigenous concepts of the precautionary principle, intergenerational equity, conservation of biodiversity and sustainable use of wildlife. For us, they are already incorporated within our traditions.

Charles L. Missi, An indigenous  
perspective on flying fox harvesting

The Precautionary Principle in its modern form cannot be expected to appear in the oral and written traditions of the different cultures.

But exhortations to prudence are ubiquitous, and they are generally interpreted, by people referring to those traditions for orientation, as suggesting a precautionary approach.

It is important to note again that the Precautionary Principle is one of several components in this approach and must be balanced with other principles as well as specified for the context of radiation protection.

Both balancing and specification are in need of cross-cultural discourse, involving experts and stakeholders from different backgrounds.

Here, we can only give preliminary indications of where the commonalities might lie and what they might mean for radiation protection.



What would the application of the Precautionary Principle mean for radiation protection?

One example:

ICRP Publication 103 still supports the LNT model as the most appropriate way of risk extrapolation to small doses

Nevertheless, it is suggested that "... the calculation of the number of cancer deaths based on collective effective doses from trivial individual doses should be avoided."

This is justified by saying that such calculations are "biologically and statistically very uncertain".

Evaluation in the light of Precautionary Principle:

Yes, such calculations are "biologically and statistically very uncertain", i.e. „some cause and effect relationships are not fully established scientifically“ (Wingspread).

But the harm is „morally unacceptable“, and at the same time „scientifically plausible“ (COMEST).

So, the possible effects of so-called „trivial individual doses“ cannot be ignored, especially where collective effective doses are significant.

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“Common morality” can provide us with additional criteria for certain problems not covered by the main principles of radiation protection

In closing,

I would like to emphasize that my main purpose is not to argue against the concept of „trivial doses“ or for the isolated use of the Precautionary Principle in this particular context.

My question is how to put radiation protection in general on a basis less biased towards “Western” philosophy and therefore more acceptable in different cultural contexts.

The cross-cultural approach may also give fresh insight into certain problems which are difficult to solve with the current mix of utilitarian and deontological approaches in radiation protection.