

Biodiversity Ethics, a Challenge for Environmental Ethics

Gerhard Wiegleb
Dept. of General Ecology
Faculty Environmental Sciences and Process Engineering
BTU Cottbus
wiegleb@tu-cottbus.de

1

Contents

- Definitions
- Discussion of classical approaches (-centrism, value classifications, principles)
- Discussion of the analytical potential of ethical theories
- Account of case studies comprising biodiversity dilemmas
- Conclusions

2

What is Ethics?

There is a variety of definitions.

- ▶ The sum of beliefs of how to behave and how to **live correctly**
- ▶ An instrument to put one's moral beliefs into action (i.e. the **application of rules**)
- ▶ A theoretical construct to codify our **moral intuitions**
- ▶ A summary of considered **moral practice**
- ▶ An effort to guide one's conduct by **reason**

I would prefer:

- ▶ A guideline for making **judgements about right or wrong, or good or bad**

3

What is Biodiversity?

Article 2 CBD (www.biodiv.int):

"Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems

4

What is it really?

- ▶ Biodiversity comprises **number and difference** of all life forms, i.e. **genes, organisms, species, and ecosystems, imbedded in the biosphere.**
- ▶ Biodiversity has been deliberately invented in 1986 as a political **buzzword** in order to promote nature conservation and ecological research.
- ▶ It is a borderline concept unifying aspects of **natural history, ecology, nature conservation and socio-economics.** Therefore it was so successful.

5

What is Biodiversity Ethics?

- ▶ **Biodiversity Ethics** is an applied ethical discipline, as part of **Nature Ethics, Bioethics, Life Science Ethics and Environmental Ethics.**

It is partly overlapping with

- ▶ **Animal Ethics** dealing with the treatment and protection of individual animals.
- ▶ **Nature Conservation Ethics** dealing with the protection of the natural environment (wildlife, habitats, landscape).
- ▶ **Resource ethics** dealing with resource protection, protection of soil, air and water, and problems of traditional agriculture (**Land Use Ethics**).
- ▶ **Biotechnology Ethics** dealing with the application of biotechnological methods in animal and plant breeding.

6

History of Nature Ethics

- ▶ Nature ethics is said to have started around 1950 in the USA (**Aldo Leopold, 1949. A Sand County Almanac**). Leopold thought that the classical ethical approaches (with their focus on Anthropocentrism) are **not applicable** to nature protection problems or, were even the **reason** for nature destruction.
- ▶ This was a misconception, as major ideas of a pluralistic nature protection were developed by his contemporary **Gifford Pinchot**. Also **nature values** can be included into a Utilitarian calculus.
- ▶ In academia, the 1970s non-anthropocentric nature ethics got a major push in relation to the rise of the anti-establishment **environmental movement**.
- ▶ Almost unnoticed from philosophical academic discussion, the ideas of Pinchot became the basis of international conventions (**CBD, Sustainability report**) and ecological economics.

7

Value of Biodiversity

According to CBD, Preamble:

- ▶ "Conscious of the **intrinsic value** of biological diversity and of the **ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values** of biological diversity and its components...."

but Article 2 says:

- ▶ "**Biological resources**" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.
- ▶ Also in BNatSchG you would find both Leopoldisms and Pinchotisms

8

BNatSchG

§ 1 Ziele des Naturschutzes und der Landschaftspflege

Natur und Landschaft sind auf Grund ihres **eigenen Wertes** und als Lebensgrundlagen des Menschen auch in **Verantwortung** für die künftigen Generationen im besiedelten und unbesiedelten Bereich so zu schützen, zu pflegen, zu entwickeln und, soweit erforderlich, wiederherzustellen, dass

1. die Leistungs- und Funktionsfähigkeit des Naturhaushalts,
2. die Regenerationsfähigkeit und **nachhaltige Nutzungsfähigkeit** der Naturgüter,
3. die Tier- und Pflanzenwelt einschließlich ihrer Lebensstätten und Lebensräume sowie
4. die **Vielfalt, Eigenart und Schönheit** sowie der Erholungswert von Natur und Landschaft

auf Dauer gesichert sind.

9

Measurability of Biodiversity

Biodiversity is plagued by an unsolved scientific problem:

- ▶ It is difficult to measure. It is particularly difficult to integrate the levels of the gene, species, ecosystem and above into **one meaningful index**.
- ▶ Parameters measuring diversity on one level only (**species richness**, number of endemic species) are regarded as dissatisfying and incomplete.
- ▶ And in practise even species richness is in often difficult to measure. People are working with **correlates** of total species richness (e.g. species number of well investigated groups such as birds and butterflies) or **surrogates** (flagship species like the Great Panda).
- ▶ No value assignment without measurement!

10

The Evaluation Problem

Nobody would seriously deny that **living beings** have some **value**.

- ▶ They are the **basis of human life** as food, raw material source, source for pharmaceuticals, they provide indirect ecological services, they can be used in science and education etc.
- ▶ They have **cultural importance** can be the basis for aesthetic pleasure and other amenities, e.g. ecotourism.
- ▶ At least towards the Great Apes, we might even have undeniable **moral obligations**, as they are „our kind“.
- ▶ But it is difficult to exactly estimate the value of the mere **existence** of a species or of **one species more in a community**.

11

Classical Approach: The Range of Moral Intuitions

Range of moral intuition	Value arguments
Egoism	Survival of the individual or a group
Anthropocentrism	Reason, consciousness
Pathocentrism	Feeling of pain and pleasure, sensitivity
Biocentrism	Striving for unfolding, goal-directedness, purposiveness, interest
Physiocentrism	System function, integrity, health, stability, balance, equilibrium
Cosmocentrism	Mere existence

Limit of standard intuitions



12

Difficulties of Biodiversity Ethics

- ▶ Another difficulty is that biodiversity and its components have only recently been introduced by **science**. They do **not** belong to our **traditional life world** and they have **not** been treated by **traditional philosophers**.
- ▶ If **human interests** are directly touched (e.g. lack of resources or poisoning of the environment), our moral intuitions work well.
- ▶ Still, the interests on many **non human individuals** (sentient animals) can be taken into account as morally relevant.
- ▶ But when it comes to **fuzzy entities** such as species and ecosystems, any „interest“ is difficult to define.
- ▶ Towards the lower end of the table **intuitions and empathy** are fading.

13

Panic reaction: a special „ecological ethics“?

- ▶ Deep ecology (Ecosophy)
- ▶ Social ecology (Ecoanarchism)
- ▶ Ecosocialism (Political Ecology, Contractual E., Utopian E.)
- ▶ Ecofeminism
- ▶ Bioregionalism (Cultural B., Regionalism)
- ▶ Ecologism (Naturalism, Ecofascism)
- ▶ Environmentalism, Conservationism, Preservationism
- ▶ Land ethics
- ▶ Biocentrism (Egalitarian B., Biocentric Consequentialism)
- ▶ Ecocentrism (Physiocentrism, Ecoholism, Ecological Egalitarianism)

No!!!!

14

Personal Remark

- ▶ There are good reasons to believe that **classical ethical approaches** (such as Utilitarianism, Ethics of Responsibility, Ethics of Justice) can well serve for the justification of the protection of nature and biodiversity.
- ▶ I assume that all value statements are **anthropogenic** and embedded in a social and cultural context (but **not fully determined** by those).
- ▶ Neither does Nature have any „**value per se**“ nor „**intrinsic value**“ nor can we learn **anything** from Nature (e.g. think „ecologically“).
- ▶ Any non-anthropocentric ethics is **superfluous** (not necessarily dangerous, leading to ecofacism, see T. Regan)

15

Levels of Argumentation (K. Ott)

Level	Questions
<i>Philosophical-ethical</i>	General justification - Why do we protect or restore the environment?
<i>Political</i>	Selection of aims that might have a binding function for a society – Why do we give priority to certain objectives?
<i>Casuistic</i>	Selection and implementation of measures in specific situations – What shall we do in a concrete situation?

The alternative: a rational approach to ethics

16

General Considerations (A. Krebs)

A gradient model of intrinsic vs. Instrumental values

Value category	Value arguments
Instrumental values	Direct and indirect use (basic needs (food, fibres, pharmaceuticals), landscape ecological functions etc.)
Eudaemonic intrinsic values	"Well-being of human soul" (amenity, cultural, aesthetic, emotional and religious values*)
Moral intrinsic values	Moral obligations of man to other beings (including "responsibility", "care" and "commitment")
Absolute intrinsic values	Only derived from properties of the protected object itself (e.g. diversity, individuality) *

* otherwise excluded as „theistic“

17

Political Level

- ▶ On the political level, the problems become clearly visible. Each territory will contain **a lot of biotic entities** and their protection might come into **conflict** with each other or, with vital or non vital human interests.
- ▶ **Political aims** of biodiversity protection are being laid down in international conventions (e.g. CBD 1992), national laws, action plans, programmes etc. Political aims are also advanced by NGOs.
- ▶ Binding function for the society can only be reached if **credibility** is gained. Justification must be clear and resulting aims and **interest conflicts** have to be made **transparent**.

18

What Makes up a Good Biodiversity Ethics?

- ▶ **Logical consistency** within a moral philosophical theory (e.g. not using tautological arguments for the defence of a biocentric approach).
- ▶ **Acceptability** (for myself and others, not leading to unpleasant consequences such as misanthropy or naturalistic fallacies).
- ▶ **Life world orientation** and understandability for laymen including politicians.
- ▶ **Use value** for the solution of real world biodiversity dilemmas (e.g. selection of nature reserves, environmental impact assessment, environmental liability questions, and ecological restoration).
- ▶ **Transparency** (if it comes down to concrete decision-making

19

Example: Principles for Solving the Dilemma of How to Treat Nature (P. Taylor)

1. **Principle of Self-defense** (a **basic** interest of a living being is contrary to a **basic** interest of humans, if an organism is obviously harmful, e.g. the Anopheles mosquito)
2. **Principle of Proportionality** (a **basic** interest of a living being is contrary to a **non-basic** interest of humans: e.g. coats of cat fur)
3. **Principle of Minimum Worst** (a **basic** interest of a living being is contrary to a **non-basic** interest of humans, but **down-weighted** for other reasons: e.g. collection of animals for scientific purpose)
4. **Principle of Distributive Compensation** (**basic** human interest and interference cannot be avoided, damage should be fairly distributed: e.g. wetlands have been over proportionally destroyed in the past and should therefore be specially protected)
5. **Principle of Restitutive Compensation** (if cases 3 or 4 have been violated in the past, restoration might be appropriate)

The approach is nice but neither logically consistent nor useful for solving practical problems.

20

Analytical function of philosophical theories

Examples

1. Ecological restoration
2. Environmental liability, damage to biodiversity
3. Species protection

21

1. Definition of Ecological Restoration

- Ecological Restoration is an attempt to guide **damaged ecosystems** to a previous, healthier, more natural, or any other desired condition (a reference state).
- The prefix „Re-“ does not necessarily imply a historic state
- „Attempt“ indicates that restoration can fail because of many uncertainties in the restoration process
- All planning, legal, social, and economic aspects under which ecological knowledge is implemented into social decision-making processes must taken into account.

22

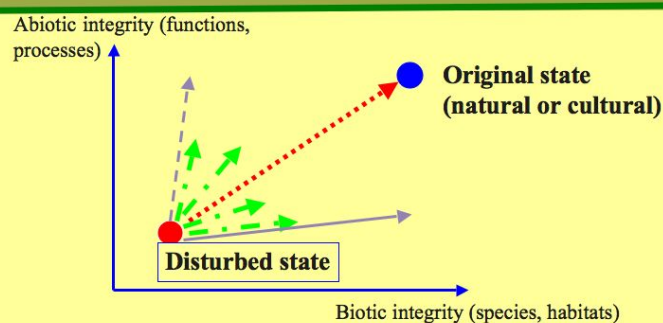
Examples of Ecological Restoration

- Overcoming severe degradation caused by mining
- Overcoming soil degradation in arid zones e.g. by desertification, salinization etc.
- Enhancing biodiversity at the landscape level
- Rehabilitating river courses and flood plains



23

Goals of Ecological Restoration

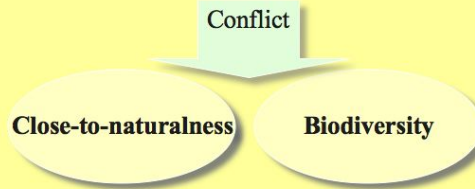


What to do first: restore abiotic integrity (and hope that biodiversity follows automatically) or restore biotic integrity directly (and accept that abiotic conditions may not fit)

24

Aim Conflicts in Restoration

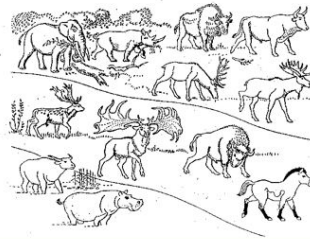
Natural habitats in Central Europe originally have been **less diverse** than disturbed ones



→ Drastic examples: **post mining landscapes** and **former military training areas** harbour high biodiversity.

25

Biodiversity and Naturalness do not coincide



The price of biodiversity gain?!

Data from Walter & Breckle and Klausnitzer

Species no. Taxon	In Central Europe	In beech forests	In cities
Mammals	98	27	22
Birds	400	70	200
Reptiles	14	5	4
Amphibians	19	7	10
Snails and slugs	490	70	55
Spiders	2,280	560	680
Crayfish	900	26	8
Myriapods	200	60	25
Beetles	6,800	1,500	1,190
Butterflies / moths	3,000	1,300	1,880
Hymenoptera	10,000	700	1,110
Diptera	6,000	1,080	240
Other insects	3,000	580	800

What are Motives for Restoration?

Viewpoints discussed in relevant philosophical literature

- ▶ Restoration for moral obligation (a feeling of healing previous harm done to nature, „restitutive compensation“, P. Taylor)
- ▶ Technological hubris („faking nature“, the „feasibility delusion“, Elliot, Katz)

In **practise**, restoration is driven by :

- ▶ Legal obligations (in recent nature conservation legislation restoration has been added to pure conservation)
- ▶ Economic necessity (e.g. river restoration in Germany after the damages by unusual high waters in the 1980s)
- ▶ Release from economic pressure (e.g. mire restoration in Germany after the transfer of peat excavation to Baltic countries in the 1990s)
- ▶ Restoration for aesthetic (landscape view), cultural (identification) or religious reasons („sacred groves“)

27

2. Protected goods according to USchadG (Environmental liability law)

Landscape	-
Ecosystem	Habitats according to § 21a BNatSchG (App I Bird Prot. Dir., App I, II und IV Habitats Dir.)
Species	Species according to § 21a BNatSchG (Anpp I Birds Prot. Dir., App I, II und IV Habitats Dir)
Gene	-

28

Species mentioned in Appendix II, IV and V of Habitats Directive

Group	prioritarian Species/ species of App I BPD	App II	App IV / migratory bird species	App V	Sum II + IV	total
Vascular plants	4	26	28	13	28	42
Mosses	-	13	-	39	13	52
Lichens	-	-	-	6	-	6
Mammals	3	21	44	8	47	52
Amphibians and Reptiles	-	5	22	3	22	25
Fishes	3	27	4	15	27	31
Beetles	4	14	9	-	14	14
Dragonflies	-	6	8	-	11	11
Butterflies	1	11	16	-	18	18
Molluscs	-	8	3	2	8	9
others	1	3	-	4	3	5
Birds	97		c. 150		c. 250	c. 250

total: c. 415 species

29

Quotation

**Prioritarian species of App. II of the Habitats
directive are according to Art 1h:**

**Species, for the protection of which the European
Community has a special responsibility**

30

Delimitation of biodiversity damage

- ▶ Delimitation to **ecosystem and species level**.
- ▶ Delimitation to a set of taxonomic groups
 - historic reasons (**vertebrates** are privileged in animal protection and hunting laws, **birds** are have a historical bonus)
 - mostly covered by a **pathocentric approach**
- ▶ Delimitation to a list of species for which the European Community claims **responsibility** (EU bird)
- ▶ „**The agony of choice**“ and simultaneously the arbitrariness of conservation aims is removed (at least in some types of decision-making situations).

31

Aspects of biodiversity restitution after damage

Discipline	Relevant questions	Methodology
Ecology	Restitution possible? To which extent? How long does it take? What is the probability of success?	Data sampling, statistical analysis, modelling, classification, assignment to categories Scientific discourse about feasibility
Conservation	Is restitution desired? At which costs? Which values run counter to it? What to do in case of failure?	Real substitution and compensation payment, both leading to opportunity costs The biodiversity protection discourse is always an economics discourse about willingness-to-pay
Legal	How to delimit compensation, replacement, mitigation, avoidance? What follows from commands and prohibitions?	Based on definitions, guided by principles, e.g. proportionality Social discourse on permissibility

32

3. Shark fin Soup

- ▶ Every month, 20,000 sharks are being killed worldwide for the production of shark fin soup.
- ▶ In particular in east Asia, shark fin soup is regarded as a delicacy.
- ▶ Normally fins are being cut off and the wounded shark is thrown back into the sea.
- ▶ Those sharks have no chance of survival.



www.wildaid.org
www.defenders.org

33

Arguments against Killing Sharks

- It is forbidden to cause pain in a vertebrate animal without any good reason. Sharks are sensitive vertebrates. Therefore it is wrong to hurt them.
- Most sharks being caught are not yet sexually mature. Thus reproduction of sharks is highly at risk. Many shark species will eventually die out.
- Shark fins are unnecessary for human nutrition. Thus they need not be harvested regardless of the circumstances.
- I don't like shark fin soup.

Classification of Arguments

	Individualism	Holism
Anthropocentrism (instrumental values)	4. <i>I don't like shark fin soup.</i>	3. <i>Shark fins are unnecessary for human nutrition. Thus they need not be harvested regardless of the circumstances.</i>
Non-anthropocentrism (non-instrumental values)	1. <i>It is forbidden to cause pain in a vertebrate animal without any good reason. Sharks are sensitive vertebrates. Therefore it is wrong to hurt them.</i>	2. <i>Most of the sharks being caught are not yet sexually mature. Thus reproduction of sharks is highly at risk. Many shark species will eventually die out.</i>

Protection of Sharks Revisited

- ▶ *Shark protection is a controversial topic.*
- ▶ *Sharks are dangerous predators and potential competitors of humans.*
- ▶ *Sharks are ugly and terrifying and do not belong to the "sympathetic mega fauna".*

SO

Which argument for shark protection would you prefer?

More Arguments

	Instrumental	Aesthetic	Moral	Residual
1. Sharks will be an important source of pharmaceuticals in the future	x			
2. Sharks give good examples of natural solutions of technical problems ("bionics"); e.g. the hydraulic shape, special properties of the skin	x			
3. Sharks are parts of the creation and deserve convivial protection		x		
4. Sharks look nice and are very elegant swimmers. Shark watching is an enrichment of human life		x		
5. Sharks have a right to live			x	
6. There is a duty to protect shark species beyond the protection of individual sharks from being tormented			x	
7. Sharks are unique products of 400 million years of biological evolution and conserve a high amount of biological information				x
8. Sharks are essential components of natural ecosystems. As top predators they structure the whole food web				x

Arguments 7 and 8 may lead to commit a naturalistic fallacy

37

The Naturalistic Fallacy, simple cases

1. As biological evolution is based on natural selection or the **survival of the fittest**, also human societies have to be based on that principle (**Social Darwinism**).
 2. As in nature different kinds of organisms (species) are **neatly apart**, also in human societies different races, classes and sexes should be kept apart (**Racism, Apartheid**).
 3. As ecosystems are in a **harmonic balance** (are working in cycles etc.), also human societies have to be organized like that (**Ecologism**).
- **Scientific facts cannot be directly converted into values**

38

The Naturalistic Fallacy, complex cases

1. *Wild living animals should be protected because of their importance for the **Balance of Nature**.*
2. *Keystone species should be protected as they enhance the **stability of ecosystems**.*
3. *Top predators should be protected because of their importance for the **integrity of an ecosystem**.*
4. *Diverse ecological systems should be protected as they stabilize the **global life support system**.*

The status of such statements is difficult to analyze as factual incorrectness mixes with both the is-ought-fallacy and the naturalistic fallacy.

39

Recent Case Studies: Headlines of 14 to 20 April, 2008

- Bio fuel is recognized as no. 1 enemy of the green movement, it has not only a negative CO₂ budget (mire destruction by palm oil plantations), but affects tropical forest biodiversity, Oran-Utan habitats, as well as livelihood of indigenous people
- Agricultural areas set aside in the past ten years are going to be reused for intensive agricultural production to fight world famine
- Lacking habitat networks in Germany lead to increased traffic accidents with game
- Germany has not enough money to pay rangers and foresters in newly implemented nature reserves (e.g. NATURA 2000, National Natural Heritage)
- Eco bee-keepers are afraid of GMO crops, GM rape seed plants proven to persist 15 years and longer
- Lacking mangrove protection affects livelihood of fishermen in Bangla Desh
- Peat excavation and river chanellization at the expense of natural habitats goes on in Germany

40

Case studies continued

- When bamboo starts to flowers the rats come to Manipur (in contrast to Hindus Christians hate rats)
- The aliens in bird seed (of Raccoons, Giant Knotweed, and Ragweed)
- While Australia is still protesting against illegal Japanese „scientific“ whaling they launch a campaign to kill kangaroos which became abundant in some areas destroying their natural habitat
- Overexploitation of fish resources has reached Antartica and the deep sea, molluscs die because of decreasing CO₂ storage capacity of sea water
- The unexplained extinction of Amphibians continues
- „Effective micro organisms“ may cause unforeseen damage to other biota
- Bruno the problem bear (the Brown Bear is a specially protected, prioritarian species in the EU) is now shown in a natural history museum

41

Comment

- None of these cases can be decided based on theoretical reasoning alone
- Cases require a careful analysis of moral agents and patients, the interests of the agents, the consequences of the action of agents on patients, an overall balancing to public and private goods and bads, and subsequently a decision
- All cases have an ecological dimension (what is possible?), a conservational dimension (what is desirable?), an economic dimension (which costs must be born?), a social dimension (what is acceptable?) and a legal dimension (what is permissible?)

42

Levels of Observation to be Considered

Level of observation	Relevant aspects or indicators
Individual good	The “good life” of an actor or stakeholder, e.g. a donator, an eco ranger, local people etc.
Social good	Justice and welfare (based on legal regulations, traditions, customs, and socio-economy) of a society
Overall good	Global environmental quality as a collective property (“heritage”) of mankind

43

Latest news (TAZ of 21 April, 2008)

- ▶ Eat more porc in order to preserve old pig breeds (Dülmener Landschwein).
- ▶ Only what tastes good will be preserved.

- ▶ Regardless of loss of unique genes or welfare of sentient animals, utility is the only thing that counts.

44

Values, Preferences and Motives

Judge the following statement:

I prefer eating meat from “happy cows” held in close-to-natural pasture grounds rather than meat from cows held in artificial barns of large-scale animal husbandry.

Do motives make a difference? Judge the following justifications? Do you agree? What kind of argument do they represent?

1. I find that naturally raised cows have more tasty meat.
2. I appreciate naturally raised cows as landscape managers.
3. I appreciate that naturally raised cows live in better conditions than those ones raised in “functional” barns.
4. I am regarded as a good environmentalist if I refuse to eat mistreated animals.

Which viewpoint could also be shared by a vegetarian or a Hindu?

45

Hobbes' s Argument (1655) still holds

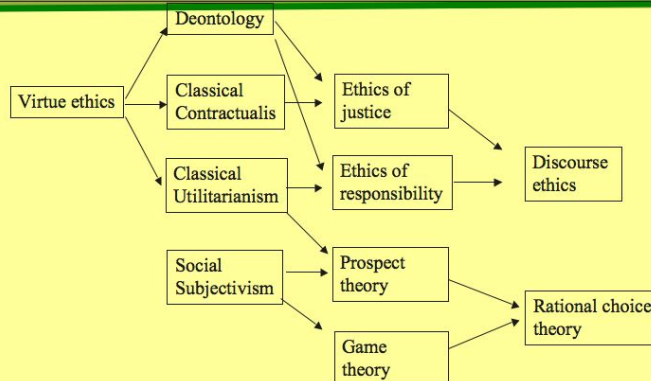
- ▶ There are **no divine commands**
- ▶ There are **no moral facts** built into the nature of things
- ▶ There is **no altruism** built into human nature

Hobbes' s project was triggered by the experience of the time of fierce **religious wars** in Europe culminating in the 30 Years War and the English civil war. He asked:

- ▶ How can we **survive** in such a world as self-interested human beings among other self-interested beings?
- ▶ To avoid the constant state of war a „**social contract**“ is necessary.
- ▶ Of course, the social contract is a fiction and has to be **reconfirmed** repeatedly (by education, mutual agreements to elections).

46

Classical ethical theories to be taken seriously



47

Thank you for your attention!

Acknowledgements

The ideas of this presentation have been developed in the framework of various research projects, which have been funded by National Science Foundation (NSF), Deutsche Bundesstiftung Umwelt (DBU) and German Ministry of Science and Education (BMBF).

Literature:

Wiegand, G. 2006. Value and Measurement of Biodiversity. BoD, Norderstedt

48