

Chapter 10: Values and World Views

10.1 Introduction

We must employ our best intellectual efforts to effectively address environmental problems. This requires that we join the effort to bring together substantial information on these problems, analytical tools, and an understanding of how our individual and societal values interact and mold our actions. It is straightforward to address the required knowledge and useful analytical tools. It is more challenging to describe how our values, as individuals and as a society, can be integrated into scientific management. In “science” we purport to look for evidence that would prove our hypotheses and claims false, but the rest of the time we collect evidence and stories that fit in with our preferred schema for how the world works and confirms (not refutes) our biases. Understanding how worldviews and their underlying assumptions shape environmental arguments is a valuable tool in working with broad range of stakeholders that we confront in a pluralistic society. This chapter describes the importance of factoring these values in the definition of environmental problems and outlines the types of values that we can and can’t deal with in a scientific manner.

10.2 Judgments and values are present in every problem

Scientific environmental management deals with problems. A problem is any situation that we have judged could be better or needs to be fixed. Thus even the idea of an environmental problem includes a judgment or decision relative to what is and what could be. Some scientists argue that science should be objective and not include values in their work because it might bias the results or sway the research in some subtle manner. This is definitely a cause for concern and there are times when science should be done as objectively as possible (such as in lab trials for a drug or pesticide or when developing a new method). But in environmental science and management the larger questions (i.e. larger than just one set of lab experiments or development of a new method) are problem driven, not curiosity driven. The focus of this chapter is how four or five categories of worldviews can be used to describe the bulk of value-related discussions in environmental problems. These worldviews are each self-consistent sets of values and preferred analytical approaches that reinforce each other.

Why an explicit treatment of values is important

It might seem like some approaches are more objective than others and thus less prone to errors introduced when the objective scientific results are passed for someone else to make a judgment. The idea is to quantify or routinize the decision process to such an extent that there will be little room for judgment error. The goal of objectivity often takes the form of a two-step, serial decision process in

which isolated scientific data is passed to a separate level of managers to make the decision. This objective process doesn't eliminate judgment; instead, it pushes all of the judgment to the beginning of the process. One begins by deciding to use a particular method of data gathering and analysis and then agrees (sometimes before any information is available) on an algorithm (set of steps) that will determine the outcome. We will see in this chapter that adaptive management principles can guide us to use a process in which the values are made apparent and are included from the very beginning. This chapter will also show that this process can be rigorous, unbiased and extremely useful when addressing complex or wicked problems.

Different types of values

In this chapter we will use some terms in the following way (see below). This does not mean that other uses of these terms are wrong, but rather should alert you to the possible ambiguity or multiple uses of these terms elsewhere.

- values = relative preferences for material, processes and outcomes
 - felt values - strongly held values that are unlikely to change (Norton)
 - considered values - may be altered or negotiated
 - fundamental preference diversity- range of strongly held beliefs, similar to felt values (Page)
 - perspectives and tool diversity - range of ways people would perceive and address problems

- valuation = assessing many different aspects of any path or scenario for dealing with an environmental problem
- needs = biological requirements for living

Humans have requirements for living right now at a particular societal level. We will describe these as "needs" even though someone could choose to live with a lower level of resource availability or care. By this definition, discretionary consumption or over-consumption would be the use of resources or demands on social services above what a person needs to survive and function within their society. For the purposes of this chapter it will be convenient to separate out decisions that are required to meet needs with those that can be addressed as a range of preferences. For example, it would not be a valuable use of time to have a long conversation in the community over how much someone who is dying of thirst "values" water. Similarly the very important discussion about the rights of individuals in a society to access resources to meet their needs will not be addressed here. Instead we are focusing on how individuals within a society put values onto potential outcomes for problems.

10.3 Self-consistent sets of values make up worldviews

We often associate consistent sets of values as a particular worldview. For example, in regards to sustainability one can examine a population and find a range of values and combinations of values; however, there is a trend toward these sorting out

into four major categories (Table 11.1). This sorting happens because some individual value statements are more likely to occur with some rather than other statements. For example, Cornucopian would value technology so highly they would deem natural capital preservation of lesser value because they think they can replace it with technology. However, this broad typology should not make one think that everybody fits into only one category or that there aren't other ways to have combinations of life values. For example, many people might self-identify with being a committed-environmentalist, but they also favor increased efficiency as a solution to problems over strict conservation (like the industrial or accommodating ecologist category).

Table 10.1 Ecological/Sustainability World Views (Turner et al. 1993)

	technology	sustainability	other
Cornucopian	optimistic technologist	very weak	individual and property rights
Accommodating - industrial ecology	use efficient technologies and market incentives	all capital is convertible, weak sustainability	equity for all instrumental value in nature utilitarianism
Communist - committed environmentalist	preserve resources	strong sustainability	green economy collective interests take precedence over individual human interests
Deep ecology	preservationist	very strong	broader definition of rights

	severely limit resource take	sustainability	(animal, plant and earth sys
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The purpose of this table is illustrate the trends in general sets of values that stem from worldviews. Because these are linked to the history and identity of a person, many of these values would be strongly held and not negotiable.

Another description of worldviews can be derived from how groups think society governs itself and what groups think the role of individuals should be in that governance. This typology is also based on the hypothesis that there are only a limited number of ways that humans can perceive the world, and

that certain dominant, self-reinforcing. There are four categories (van Asselt and Rotmans 1996):

Hierarchist:

- . nature is robust within limits and can withstand stresses
- . people need well-defined rules to function in society
- . we should control nature
- . value social stability
- . many risks are acceptable

Egalitarian:

- . nature is fragile like a complex ecosystem
- . people are generally good and willing to cooperate if given the opportunity
- . we need to prevent damage to nature
- . value social equality
- . most risks are unacceptable, we should follow the precautionary principle

Individualist:

- . nature is robust and will be able to adapt to stresses
- . people seek their own best-interest
- . we should adapt to and exploit changes in natural resources
- . value growth of society and economy
- . comfortable with risks as necessary to promote growth

Fatalist:

- . what ever happens, happens
- . not very interested in being involved
- . failures of others validate their viewpoint

The ecology/sustainability and governance typologies can be mapped onto one another (Table 11.2). The match is not perfect; for example, hierarchists aren't always the same as industrial ecologists, but it's close enough to see how both

typologies are useful and not contradictory. This comparison demonstrates that worldviews have favored metaphors to describe how the world works and preferred cognitive tools. Someone who maintains a narrow worldview would have his or her values reinforced by the type of information they collect (cognitive tools) and their general mythology of how the world operates supported. Although you may agree with the premises that lead to a particular worldview, it is crucial that you learn about the other viewpoints and are able to assess your understanding based on a wide range of information. The multiple-perspectives framework is a start toward achieving this goal.

Table 10.2 Comparison of two typologies of worldviews, MEA scenarios, cognitive biases and underlying metaphors or mythologies.

Governance world view	Ecology sustainability world view	MEA scenario	cognitive biases	example metaphor or myth
Individualist	Cornucopian	Techno-Garden		survival of the fittest
Hierachist	Industrial ecologist	Global Orchestration	quantitative systems tracking	
Egalitarian	Committed Environmentalist	Adapting Mosaic	cooperative nature of networks	
	Deep Ecologist			

Fatalist		Fortress World		
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Another example of how worldviews differ in context is the comparison between worldviews and human social development. Ken Wilber (2000) (check this reference - maybe it should be to Beck and Cowan 1995) elaborates on the stages in spiral of human development. In this model, humans develop socially beneficial attributes by moving through stages and developing the spirituality and knowledge to interact with other people. The fourth, fifth and sixth levels of development are of interest to us. Wilber (2000) also describes the approximate proportion of the US population that is in this stage and the relative amount of power that they have in society. This is interesting because the level/worldview that has the potential to impact the environment most dramatically, i.e. the individualist, has power that is out of proportion to the population. This is what we would expect if they are using natural resources, harnessing energy and driving the capitalistic economy.

Level 4 - Blue: mythic order (similar to hierarchist)

- . life has meaning, direction and purpose
- . there are definite right and wrong
- . there is a social hierarchy that is paternalistic
- . about 40% of the population and 30% of the power

Level 5 - Orange: Scientific achievement (similar to individualist)

- . states truth in individualistic terms

- . rational machine metaphor
- . nature can be understood and mastered
- . about 30% of the population with 50% of the power

Level 6 - Green: Sensitive self (similar to egalitarian)

- . communitarian values
- . ecological network metaphors
- . 10 % of the population and 15% of the power

Worldviews are essentially the way that people use their values in a consistent manner to act on information about the environment. The perceived structure can be highly tinted by the cognitive tools they use to collect information and the metaphors that they use for comparison. In some situations, a worldview may or may not match the actual structure of environmental information. When it does match, this is called a "utopia", and one's decisions have a high chance of being correct. When one's view and the actual structure don't match, this is called a "dystopia". One would think people would change their point of view after seeing that their decisions were mostly wrong, but often they don't. As a trivial example, consider what happens to someone who has a vision in their head that city streets are all laid out on an orthogonal grid and that most of the streets are thoroughfares. When they are confronted by a set of dead-ends and one-way grids they become confused and get hopelessly lost looking for streets that go through. (Maybe the current generation of GPS users isn't as susceptible to this.) It takes some people a long time and many utterances to admit that they are lost. In the

environmental realm, worldviews may be driven by an ideology that is not easily changed. For example, dyed-in-the-wool deep ecologists may never agree that there are situations in which animals might be a good source of food, and may suffer malnutrition and personal deprivations because of this. We won't focus here on individuals but instead on the general idea that society could be made up of a range of these worldviews and that one view might be dominant for decision making.

10.4 An overview method for including values

This chapter presents one possible method for bringing values into the discussion of environmental problems. It is very similar to the framework for using multiple perspectives and draws heavily on the three tenets of scientific adaptive management of experiential, scale sensitive, and place specific (Norton 2005). The parts of this method will be listed below and then explained in more detail.

- a. Pluralistic conditions must be established to support the aggressive inclusion of many different points-of-view and value sets. In essence, this requires that there will be multiple criteria that are on different scales and don't converge to one underlying value.
- b. There must be a definition of what place and people are responsible for the resource and the solution. This community must declare their commitment to solving the problem. All the people and sub-groups within this community have to respect a pluralistic approach and a democratic process.

c. Disputes will be resolved based solely on the evidence that is available for this decision at this place at this time. Pre-experiential, i.e. ideological, solutions will carry much less weight. The shared commitment to the problem and the shared experiences will help the community create a language for describing the problem and its evaluation.

d. The process will require creating a multitude of scenarios or paths and then evaluating these paths with evidence and indices of progress. Competing interests may favor both different paths and the employment of different indices, but all indices must be applied to all paths.

Pluralism

First of all, pluralism is the commitment to seek out and nurture conditions that will allow the presentation of different opinions, values, and methodologies. These conditions will support respectable and involved participants in their efforts to get their thoughts, questions, and values heard. Not everyone deserves to be heard in these debates. There are often people who aren't committed to pluralism but who use that as a platform to voice their unfounded, anti-pluralistic complaints. If they don't respect the worldviews of others in the community, then they have no right to speak or present their ideas in this format. That may seem harsh and anti-democratic, but it's actually the reverse. Only people committed to the ultimate democratic resolution can be involved. Everyone involved needs to be able to say, "I respect your right to make that claim, but I disagree and here is why." A common expression of the lack of trust and

respect in these decision-making processes is overt or disguised scoffing at an idea. For example, an administrator might dismiss out-of-hand a suggestion because he or she thinks it is infeasible. That judgment of infeasibility needs to be examined respectfully, not just throwing out the idea.

Open fora for discussion and dissemination of different scenarios are often not pluralistic in practice. It seems that many agencies might organize stakeholder meetings that serve the main purpose of allowing the public to vent over an issue. If they hold enough community meetings, people get worn out from objecting and the process moves ahead. This is not pluralism because there was really no mechanism or time built into the process to consider these ideas as anything but complaints. Truly bringing values into the process will take more time than just allowing people to vent. Another common form of pseudo-pluralism is to play the Goldilocks game. Planners or managers present a wide range of scenarios where the fix is already built into the plans that are not too hot or too cold. You should be able to detect this through both the discussion and through how the scenarios have been framed (see below under skills and assets).

Community and Commitment

Environmental problems are place specific. They may share some attributes with other problems and this might allow some degree of generalization, but one of the three tenets of adaptive management (Norton 2005) is that problems are place specific and that you have to understand the immediate context as well as the larger scale framework. There

are many issues related to dealing with scale in environmental problems (See Chapter 5), and one of them is to decide what size of community can participate in the conversation on a particular problem. The community may be all the people and groups that are involved in this specific problem and who can demonstrate that they are dependent on the results.

Once a community has been identified, the next task is to get that community to unanimously agree to a statement of goals for this specific process. The statement of these goals may need to be inclusive and may be vague or ambiguous on particular topics. The important point is that everyone in the community has to agree to work toward those common goals. This is the crux of the problem because the rest of the process depends on defining a community that is willing to work together.

Experience and evidence as the primary arbiter of disputes

In the adaptive management process described by Norton (2005), one of the three tenets was that all the decisions need to be made based on experience or experimental evidence from that particular instance of the problem. Pre-experiential or ideological approaches are not permitted to serve as evidence. Another point that he makes is that values are also up for discussion as well as revision in this process and that every management experiment is also an experiment in values.

This requirement leads to a major problem that will be discussed below, which is that we need common experiences to build the language needed to

incorporate values into the solution. Thus experience serves as both the main source of information and the platform on which to construct language about values. This means experiences that are directly related to the problem are highly desirable, but direct experience is a time-intensive way to learn about the problem.

Evaluating paths with data and indices

Once the community has been identified, committed to solving the problem and made their preferences and values known, the final part of the process is to get groups or individuals with different visions on how this problem might be solved to create scenarios for their suggested solutions. These scenarios need to address:

- . a description of the situation and process
- . the scientific information at hand and what's needed
- . what they suggest should be done
- . how they will collect direct information
- . what combinations of factors they propose (indicators) will accurately reflect progress toward their preferred outcome

These scenarios need to be concrete descriptions that can be presented, discussed and modified. The key part of this stage in the process is that the discussion focus on only on the technology, knowledge and assumptions of these scenarios. The discussion must be limited to what the community has agreed on and is committed to solving. It is very easy to widen the problem by adding in other issues. If that happens, the community must agree to widening the scope and the composition of the community must be examined to see if it needs to

be more inclusive as well. For example, it is not uncommon for communities to worry about whether the particular place-specific solution represents a variance or exception to policy that would serve as a dangerous precedent. To bring in this issue is to generalize from the solution proposed to a wider scale. It has to be explicitly in the scope of the problem statement from this community to address policy questions posed by their actions before it is legitimate to consider policy implications.

Skills and assets required to negotiate the use of values

Just as a scientific experiment or management action would require knowledge and skills, the inclusion of values into a deliberative process would require people with skills in managing groups and information flow. Most of these are general skills that you learn by studying how group processes work and by working with groups of people. There are a few skills that can be very useful:

- . framing and reframing the question so that it has neutral standing
 - o avoiding or demeaning pejorative words
 - o requiring assumptions be made explicit rather than hidden in the jargon of a particular discipline or profession
- . maintaining mutual respect
 - o eliminating input from people who are not committed

- eliminating input from people who have espoused values that don't match their real values
- silencing scoffers
- . identifying who is in the community
 - knowing when to revisit the community composition and commitment statement
- . dealing with preference and instrumental diversity issues
 - knowing how to concoct subgroups that will function by drawing on all the skills needed
 - knowing when and how to have a broad-ranging discussion on the underlying values
 - knowing how to maintain everyone's felt or central values and yet focus on the area that requires compromise
- . building trust in the community
 - drawing on a host of mechanisms and activities that allow people to trust each other

For our purposes it is important to realize that working on group problems develops these skills where there is a variety of opinions and personalities in play. In addition, <!-- making a claim --> the negotiation of situations involving environmental problems and values requires practice in this domain. Other experiences from business or education, may be helpful, but the nature of the complexity with environment/humans/values problems are different and can be facilitated with particular approaches.

For example, in business there is an underlying assumption of fiscal viability, which prizes efficiency and effectiveness over other solution paths. Similarly, if the environmental problem is in a working community in which one member is a government employee and has a very strong commitment to or responsibility for the solution, the solutions will probably follow governmental policy closely. An example could be the restoration of a stream located in a state park. The park officials would probably play a controlling role in both the problem statement and identification of solutions. However, many problems are in less-defined communities and the problem has been defined with multiple non-convergent criteria that extend over different time and space scales. In this case, the solution will probably look a lot more like a social entrepreneurship approach than a business plan or an agency document.

10.5 The importance of experience and the language gap

A major barrier to incorporating values into environmental decision-making, according to Norton (2005), is the gap in usable language at the nexus of science, application and values. A major reason for this is that while it is inefficient to learn facts about the environment through experience, experience is necessary when defining values. Efficiency in learning facts should not be the goal of environmental or science education, but it has become prominent under the paradigm where facts are objective and the science should be objective. Instead we need much more effective learning about the environment, which would be infused with the

value that is inherent and inseparable from the task of studying authentic problems. Obviously, most educational activities will have to be contrived or practice situations. (We don't want First Graders learning about forest fires by starting them.) But, the connection to the environment can be genuine even if it is a practice exercise.

There are four parts that contribute to this language/experience gap:

1. We need to extend our language to describe key elements of value and environmental impact and our feelings about those issues.
2. We build our language by sharing experiences as we work toward common goals.
3. Because of our schools and living communities, many current students have been isolated from direct experiences with resource management and other environmental issues.
4. To correct this, we have to intentionally construct many problem-solving and judgment-developing experiences for students studying the environment.

10.6 Importance of trust

Since what people claim to be their preferences and values cannot be independently verified, it is necessary to build trust between the participants. There are a few situations where economists or other social scientists might be able to develop tests

for contingent value or order of preference, but these are usually single dimension problems with coherent values (not the non-convergent, multiple-criteria problems that we are most interested in here). There are several conditions that help establish trust. First, it is crucial to have an open dialog that allows for questions and responses. Publishing statements or position white papers is not sufficient for this purpose, even if they are very well crafted. Second, some aspects of the statement and personal attributes need to be verifiable. This includes the job title, address, employer or source of funding, close associates, and previous projects. These details are both easy to publish and fact-check online. Third, any dominant stakeholder or leader needs to have a consistent stance all the way from the specific issue at hand, to their personal philosophy and actions. Inconsistent stances or personalities are red flags for trust issues. Fourth, the person should be identified with a network of people who can vouch for their reputation or provide background details. If all of these criteria sounds like a job interview, that's because working with someone on a significant environmental issue could be a long process that takes as much time as a regular job.

Although it seems very personal or even petty, research has shown (Fukuyama [date](#)) that the availability of channels for rumors is also an important factor for building trust. If there are channels that would transmit a rumor, but you haven't heard one about the organization or person of interest, the lack of negative information can be significant. This type of trust building highlights the general importance of back channels for information that are separate from the direct

information flow that is being used to support the decision or project. This can be through social networks, religious groups, community activities, kids going to school together and many other mundane activities that are not usually considered important in scientific adaptive management.

10.7 Examples

*** need to finish writing these examples and provide a graphic with each ***

Example 1: World views and different attitudes toward global population growth

This example is from van Asselt and Rotmans (1996)

"The demographic data do not allow us to derive an unambiguous understanding of the factors that trigger structural changes in fertility behaviour, i.e. the so-called "fertility transition".

"plausible and consistent **hierarchist** interpretation of the scientific uncertainties, namely: the myth of nature, the perception of human nature and the driving force."

nature is robust within limits	vigorous population growth will end up in disaster as carrying capacity is exceeded
physical limits to population	
humans follow governing institutions, such as state and	fertility decisions reflect state or church statements

church	
management style is to control	family planning view, high birth rates are result of lack of availability to contraception

egalitarian

life is fragile	
ecocentrism - humans just part of nature	population growth violates quality of life for all
tolerable population limit	determined by social and ecological criteria
generally preventative	
fertility choices	modernization - "conditioned by social, educational, culture and economic conditions they face, "
policies	improve conditions of women and children

individualistic

Use dynamic uncertainty on these estimates in 2100
the population in:

Hierchist: 2.5% of simulations had about 20
billion

egalitarian: 2.5% of the simulations had
about 10 billion

individualist: ----- 20
billion

Pg 146 - The combination of these utopias with
"classical uncertainty analysis" results in "images of
the future that are probable in the light of state-of-
the-art knowledge perceived from a variety of
perspectives."

Risk assessment by comparing predictions from a
perspective with different actual outcomes - i.e.
dystopias

<!-- risk is associated with how well the
management styles do when paired with the wrong

| | |
|--|--|
| nature is an abundant resource
that it takes skill to use fully | |
| people are resources - intellectual
capital | |
| changes in fertility | induced by socio-economic
situations of individuals |
| markets | will provide contraception and
other services if needed |
| population policies | <i>laissez-faire</i> to allow market
mechanisms |

worldview -->

hierachistic strategy (which focuses on family planning)

with individualistic world view --> 15 billion people

with egal worldview --> similar to hierachistic utopian match

but not stable - continuous growth

family planning applied to indiv or egal world has less effect

stabilization of world pop below carrying capacity is "rather risky"

egal strategy (which focuses on education and legislation)

with indiv worldview --> high fertility : risky strategy

with hierarch worldview --> dystopian situation is overshoot and collapse

individualistic management (population is not considered a problem)

instead of continuous growth - results in stabilization around 11 bil

this management is "not considered to be risky"

<!-- worst mismatch seems to be egalitarian strategy in a hierarchical world because it results in overshoot and collapse-->

pg 150 - Robust strategies

"egalitarian governance in a hierachistic world and hierachistic governance in an egalitarian world are problematic"

mixed policy - combination of education and family planning are compromised and can lead to outcomes that are acceptable by both

Example 2: World views and different attitudes toward atmospheric CO₂

The issue is stated by van Asselt and Rotmans (1996) as:

"The fundamental controversy pertaining to the climate debate can therefore be summarized as: Is the global climate being significantly and irreversibly disturbed, and if so to what extent, at what rate of change and with what regional pattern, and what are the human and environmental consequences?" (authors' italics)

"whether we should act now or wait until more is known about global climate change and its consequences for man and environment."

Compare the management styles and worldviews to look for mismatches.

- . where a world view description (think of this a hypothetical reality)
- . is matched up against policy and management approaches that are based on a different worldview
- . i.e. what if the world doesn't work the way you are trying to manage it?
- . look for the best and worst cases:

Table summarizing different worldviews and how they think the climate will react based on a version of nature

	<i>CO₂ impact on temperature</i>	<i>because nature is</i>
Hierarchist	amplifying	tolerant if kept under control
Egalitarian	strong amplification	fragile
Individualist	high dampening	resilient, robust

CO₂ and temperature relationships are predicted to be:

note that individualist predicts lowest temp increase for medium CO₂

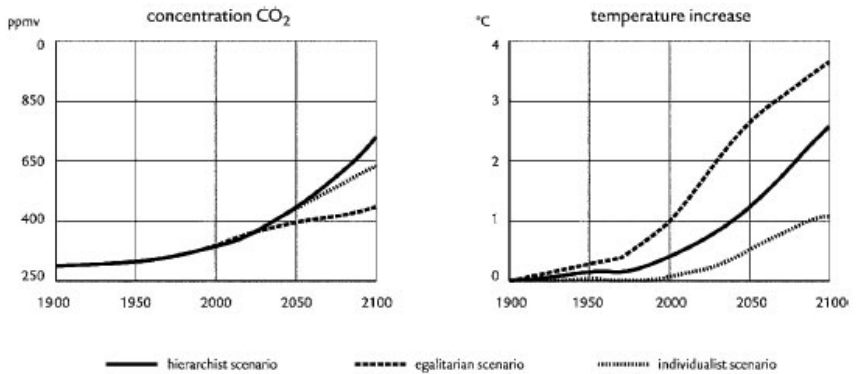


Figure 7. Outputs of utopian experiments in terms of CO₂-concentration and temperature increase.

Figure from van Asselt and Rotmans 2002

As with example 1 - the worst mismatch, i.e. the riskiest position in this case is to take the individualist strategy (that everything will damp out) in an egalitarian or even hierarchal world (where there are strong destructive amplifying effects).

10.8 Summary

It is crucial to understand the roles of values in defining and addressing environmental problems. Individual and societal values form the basis for motivation and the key for successful implementation of any project. Environmental dialogs reveal that there are four or five prominent worldviews that are employed by different portions of the public: individualist, hierarchist, egalitarian, and fatalist. Each worldview has a self-consistent set of assumptions, value statements and preferred analytical approaches. Realizing how the components work together within any particular worldview also exposes that worldview's weaknesses under different sets of assumptions about the future. Several examples from well-known issues (global population growth and atmospheric carbon increases) illustrate how understanding worldviews provides a very useful perspective on these problems.