

Science allows society to maintain its moral thread

By Goldwin Emerson
gandjemerson@rogers.com
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It is often thought that science is amoral, if not immoral, as it proceeds dispassionately seeking new knowledge. I offer here a different view of science. There is much about science that makes it well suited for moral guidance.

While one society differs from another, there is general agreement that murder, theft, and lying are immoral behaviour. Kindness, honesty, and sharing are examples of good moral behaviour in most societies. Morals have to do with *mores*, customs and taboos of societies.

It's not by accident the words *science* and *conscience* look similar. Science concerns itself with knowledge. Conscience has to do with balancing knowledge for social good. Let's consider qualities of religious, philosophical or legal moral systems and see if science complements these qualities.

Good moral systems ought to be based on accurate knowledge. If one claims it's immoral to pollute our air or water, that we are depleting our forests, or the rate at which we are fishing is unsustainable, it's necessary to accurately measure whether we are in fact doing harm to our environment. Science can provide accurate knowledge in these matters. Moral systems which disregard science rely instead on hearsay, tradition, economic gain and may be misguided.

Good moral systems are flexible enough to change with the changes in society. Sometimes longstanding moral traditions turn out to be irresponsible. History is full of moral codes which have upheld sexual inequalities, prohibition of inter-racial and inter-religious marriages, and moral codes that support human slavery.

Think of ongoing changes in morality in terms of a conveyor belt analogy. Periodically new moral imperatives are added while some old imperatives fall out of favour. Years ago it was a social expectation backed up by our laws that stores must remain closed on Sundays. This strong moral imperative has now been taken off the moral conveyor belt. Thirty years ago few householders composted garbage or carefully sorted materials to be placed in blue box containers. Now this custom has changed from a social expectation to a moral obligation.

Science can give us some directions as to what gets added and what gets removed from the moral conveyor belt. Science is not only compatible with moral flexibility, but it can be a useful tool in offering some constructive directions for change.

It is possible to be consistent and flexible at the same time. Good parents usually consider each child is of equal worth and each is to be treated with equality. Yet, one child may be talented in music, and another may pursue engineering. To raise each child with equal opportunities suitable to their best interests, parents need to treat their children differently and flexibly.

Here I am referring to an even-handed application of moral principles so regardless of gender, social position, educational level, physical abilities or disabilities, the same principles apply equally. Unfortunately history is full of examples of moral systems that accommodated themselves to the acceptance of violence, war, slavery, homophobia, racial prejudices, child labour, etc. In science, the principles of objectivity and a disinterested pursuit of truth can guide moral systems to be fair, just, and consistently equitable.

Caring is at the core of good moral systems. Science offers many examples of concern for improvement of the human condition. Examples can be found in the areas of emotional and physical health care. The main thrust of psychiatry is devoted to understanding people's emotional needs and to offering medical care in these areas. In the matter of physical health, scientific knowledge helps alleviate pain, prolong life and enable people to live comfortably.

The counter argument is that the same scientific principles of nuclear medicine which assist in clinical diagnosis can be used to produce nuclear weapons. Admittedly it is true that science can be used badly, but on balance, science has more beneficial results than negative ones. Few people would really want to return to a pre-scientific era. If we combine science with the important moral value of caring we are likely to be better off than we would be without science.

Good moral systems avoid authoritarian pronouncements. A better approach is to have people understand *why* one action is better than another. Hopefully, an appeal to reasoning in morals is more effective than appealing to changes in behaviour through fear, guilt, or threats of punishment.

In science, authorities are not entrenched in place for all time. Even Newtonian physics has been modified to more accurately fit the reality of what scientists now know about the physical world. Einstein's theory of relativity and Darwin's theory of evolution have been revised to be more accurate than in their original formulations. This self-correcting nature of science does not lend itself to trusting authoritarian pronouncements for once and for all.

It's emotionally comforting to believe there are certain unchangeable truths. Love, honesty, justice and forgiveness spring to mind as timeless moral values. However, even if we were correct in selecting these virtues, we still need to think carefully about how such values fit into our ever-changing social environment.

Good moral systems apply to a wide range of topics. Frequently evangelists concentrate on a few topics such as sexual morality, homosexuality, and the inherently sinful nature of human beings. However, science includes topics such as environmental protection, racial equality, women's rights, child poverty, world peace, equal opportunities for everyone to receive good health care or good education or proper housing.

Treating others as we would want to be treated is a very important concept in moral systems. The world's major religions espouse this essential component. In addition, moral philosophers from Confucius and Plato to recent philosophers have stated the same principle. However, it's easy to get the golden rule wrong. We have probably all had the unfortunate experience of finding that even with good intentions of helping someone in need our efforts were sometimes either misunderstood or unappreciated. Sometimes we make mistakes and our actions turn out badly

In order to apply the golden rule we need to pay careful attention to the results of our actions--- a truth recognized by the pragmatist philosophers William James and John Dewey. Whether an action is socially good and morally beneficial depends upon the *results* of our actions. When it comes to measuring and evaluating results this is where science can be helpful. For example, are the genetically altered seed grains produced and controlled by the Monsanto Company helping or harming society? Further scientific knowledge is needed to measure the results before we can proceed in a morally responsible manner.

Good morals systems are proactive. Scientists such as David Suzuki tell us *today* that harm we do to our environment will have future bad effects. Medical scientists tell young smokers *today* that smoking tobacco will be injurious to their health. Science is one of the best means by which moral systems can be proactive.

Science offers cautions about global warming and attendant problems we can expect in our environment as we deplete rainforests and hasten the expansion of deserts. And as our desert areas increase we can expect an attendant lessening of our arable land, more erratic weather patterns, and consequently more starvation and a reduced ability to feed a rapidly growing world population.

Such warnings of trouble ahead may seem to be warnings about practical matters concerning political or economic issues, but they also have implications for fundamental moral issues. Greed, sharing, caring for others, and being good stewards are involved. Science enhances our ability to be proactive in our moral decisions as we become more able to think clearly and act wisely in solving problems which in the past were thought to be problems brought upon us by random acts of nature rather than as a result of human action or inaction.

Good moral systems motivate people to act. Moral systems use various motivators ranging from fear, guilt, shaming, punishment, legal sanctions, and shunning to more kindly

approaches. Rewards, approval, acceptance, gratitude and even sainthood are on the positive side. A moral system which includes science offers the additional rewards of satisfying both our curiosity and our search for truth and meaning.

Can science help us to be moral? Yes, science provides knowledge from which we make better moral decisions. Science frees our view of morality from relying on traditions, customs and taboos of the past and to repeating not only the good, but the inadequate morals that have held humanity back. I urge you not to think of science and religion in opposition to each other. Think instead in terms of making choices in both science and religion which are compatible pathways to progress.

Can science help us be moral? Perhaps a more important question is, can we be moral without science? In today's scientific era I think not.