

Should We Be Concerned About People Who Do Not Yet Exist?

James C. Peterson

C. C. Dickson Chair of Ethics
Wingate College
Charlotte, NC 28174

To what degree, if any, should our current choices be constrained or motivated by their importance for future human beings? Our answer will be formative for choices in genetics, ecology, and other crucial areas. Arguments to benefit or at least not harm future human beings include love for one's own children and theirs, utility, love of neighbor, fear of God, self transcendence, and membership in the moral community of humanity. While concerns of autonomy, limited knowledge, and justice constrain what we can do for future generations, we can and should limit damage to their interests, and pursue improvement if this is done in a way which is incremental and reversible. Properly understood, concern for the interests of future human beings is one of our moral responsibilities.

There have always been human actions that affect future human beings, from choice of mate to large scale use of limited resources. As our technological capacities have increased, so has the impact of those choices. To what degree, if any, should our current choices be constrained or motivated by their importance for future generations? With that question in mind four points will be pursued. First, can the term "obligation" even be used regarding human beings who do not yet exist? Second, if it can be used in regard to future human beings, what arguments can be made that we should have concern for their interests? Third, what constrains responding to such concerns? Fourth, what then might be appropriate considerations when making choices that affect future generations? Our answer will be formative for choices in genetics, ecology, and other crucial areas.

Obligation and Future Status

Ethical systems usually include some degree of concern for the welfare of people, but does that include people in the future? J. Brenton Stearns argues that traditional social contract theory leads to a basic problem in this case, since future persons cannot make contracts or promises.¹ As R. B. Brandt ob-

serves, the historic paradigm of "obligation" has three requirements: a specifiable service is required of one person, two parties are involved — one to provide the service and one to receive it, and a prior transaction has created the promise.² One who does not exist cannot fulfill the criterion of making a promise. However, the term "obligation" may be used more broadly. For those who are not able to speak for themselves but who are recognized persons, such as children, obligations can be as clear as for those who can speak. The obligations may be even more clear due to the recipient's need for special protection. *Having* a claim does not require being able to *make* a claim.³ Claims can exist without mutual agreement. Often the obligation of one human being to another is extensive whether claimed or not. When such obligations are required by a position such as that of a parent, they may be called "duties," but still exemplify this broader sense of obligation.⁴ One may have obligations to people who have not made a reciprocal promise.

This paper was first presented at Seattle Pacific University as part of the 1993 annual meeting of the American Scientific Affiliation. Thanks are sincerely offered to those who took part in the following thoughtful discussion, to readers Dr. James F. Childress, Dr. John C. Fletcher, Dr. Thaddeus Kelley, Dr. Daniel Westberg, Dr. Laurie Peterson, and an anonymous PSCF reviewer.

While obligations to children who have not entered into an agreement are relatively familiar, obligations specifically to those who do not exist yet have not been as carefully addressed. Can obligations extend to future human beings? Galen Pletcher responds that some obligations may fall to unspecified persons.⁵ One has an obligation to build adequate brakes in a car even if one does not know who will eventually drive it, and the eventual purchaser has a right to sound brakes even if he was not born when the car was manufactured. Pletcher calls this kind of obligation, "obligation-function." By this term he does not mean that it is less compelling than an obligation *simpliciter*, but that it is perfectly valid, although not yet necessarily assigned to a particular person.⁶ One could say that people in the future should have clean air. If so, whoever now makes choices that affect air quality should consider that obligation. Even those, such as Macklin and De George, who specifically do not recognize "obligations" to future human beings, often argue for taking future needs into account. For this discussion, "obligation" is used without the sense of two already identifiably set particular parties that some authors assume.⁷ It is enough to be considering positive goals that should be pursued for any human beings who are likely to follow, *whoever* in particular they may be.⁸

Arguments for Considering the Interests of Future Human Beings

There is widespread agreement that a great deal is owed to our children. What do we owe *their* children? Led by powerful commitments and motivations such as love and hope, people often make tremendous efforts on behalf of their own children. That intervention for their children has effects for the children of their children. Is there any obligation to them? John Passmore argues that one should act deliberately to benefit the descendants of one's children.⁹ We do cherish people such as our children and the institutions that are important to us. While

we cannot love that which we do not know, we do have a concern for some of these which we do know. If one cares for other people, one will also care for what happens to them after one's own death. Concern from personal love extends into the future. Your children will probably be most happy if their children are happy, as those children are likely to be most happy if their children are happy. Passmore calls the resulting connections "a chain of love" from the present on into future generations. His point is not an obligation that if "A" owes "B" and "B" owes "C," then "A" owes "C." The fate of generation "C" is close and important to the happiness of generation "B" and the fate of generation "B" is close and important to the happiness of generation "A." "A" should care for what happens to generation "C" because of what it means to generation "A's" children.

The progression continues, making a chain of love that even if not directly broken, still does gradually diminish over time. Human ignorance is great, capacity to change the future is limited, and unintended effects are often more influential than intended ones. Passmore suggests in this light that the best service for future generations is to create the best possible world now. Surrendering freedom now to secure future freedoms is not worth the immediate cost and is unlikely to actually succeed. Too much is unknown and the claims are too weak to sacrifice basic goods. However, this generation should be willing to forego some enjoyments to better secure the needs of the near future, when we can project with a higher degree of probability that the effort will be substantially beneficial. Love for people we do know and care for leads to concern and effort toward their future and beyond.

Passmore's chain of love calls for concern most directly for one's descendants. Is there a further case for obligation toward those who are not closely and directly related biologically? Eric D'Arcy argues for a duty of beneficence toward any human being under the following conditions. "A" has a duty of benefi-



James C. Peterson is the chair of ASA's bioethics commission. He holds the endowed C. C. Dickson Chair of Ethics and is the Director of the Program in Religion, Ethics, and Technology at Wingate College, Charlotte. A graduate of Northwestern University, B.A., Gordon-Conwell Theological Seminary, M.Div., University of Iowa, M.A., and University of Virginia, Ph.D., he has served on the faculties of the University of Virginia, Ewha University (Seoul, Korea), and Virginia Commonwealth University. Next summer he will serve as a Visiting Fellow in Molecular and Clinical Genetics in the National Institutes of Health Ethical, Legal, and Social Implications.

cence to do X for "P" when: (1) "P" is at risk of significant loss or damage (such as severe injury or death), (2) "A's" action is necessary to prevent this loss or damage, (3) "A's" action would probably prevent it, and (4) the benefit that "P" will probably gain outweighs the likely harm to "A."¹⁰ James Childress adds a step between (3) and (4) that the likely harms to "A" are minimal, so that "A" would not be required, for example, to lose her life to save two other lives.¹¹ Such a duty would apply to whomever one could so affect. Many of our choices have such a potential affect on future human beings.

In Judaism, and even more so in the Christian tradition, such responsibility to serve others is often understood as part of the command to love one's neighbor as oneself.

For Jonathan Glover, one's obligation is to whomever follows.¹² Glover argues from the principle of equality that the worth of each individual calls for equal consideration regardless of where or when that person lives. As a utilitarian promoting the good for human beings, one should be concerned to aid and not harm others "even if one does not know their names." He cites the analogy of a bus with many passengers getting on and off. It would not be acceptable to leave a time bomb on the bus because one does not know the people who will be on board when the bomb explodes. One's place in time makes no more difference in the utilitarian calculus than one's place geographically. "The temporal location of future people and our comparative ignorance of their interests do not justify failing to treat their interests on a par with those of present people."¹³ Harms should be avoided and recognized goods should be pursued for future generations.

Thomas Sieger Derr finds such a mandate within what is common to the world views of the western religious traditions.¹⁴ Each refers to some idea of a covenant, as with Abraham, where individual choices have consequences for descendants as God interacts with children of the covenant on through the generations. Emphasis is placed on each generation fulfilling and carrying on that covenant. Also, history in western traditions is usually described in a linear sense. Despite the laments in Ecclesiastes that complain of endless empty repetition,¹⁵ history is usually described not as a repeated cycle, but as

having a beginning in creation, a consistent working of God within it, and a definite culmination followed by transformation. The future does not merely repeat the past, but can change and develop in substantially new ways. With that potential can come the responsibility to contribute to positive change.

In Judaism, and even more so in the Christian tradition, such responsibility to serve others is often understood as part of the command to love one's neighbor as oneself. An example of this tradition can be found in the work of Donald MacKay, who advocates that one should benefit one's neighbor—including neighbors in the future—with whatever tools are available.¹⁶ He cites Luke 10, saying that when the command to love one's neighbor was affirmed, the question was immediately raised about who is included in the category of neighbor. Jesus' response is the story of the Good Samaritan, culminating with the conclusion that one's neighbor is whomever one can help. Therefore, neighbor love would extend to future generations to the degree one can help them effectively. To love one's neighbor means to seek the best for others as one is able, whoever the other may be racially, culturally, geographically, or temporally. Such intervention for MacKay does not lead to salvation, perfection, or a rescue from rebellious self sufficiency, yet human beings are responsible to God to improve life for one another rather than drift in complacency.¹⁷

For MacKay one should be motivated not only by love of neighbor, but also by "the fear of the Lord."

For MacKay one should be motivated not only by love of neighbor, but also by "the fear of the Lord." Sins of omission are as serious as sins of commission, sloth as dangerous as pride. In one of Jesus' parables, the steward who buried his talent rather than multiplying it was rebuked for his inaction. Knowledge and neighbor love bring responsibility. Human beings will be held accountable for what they have achieved compared with what they could have done for the service of others and the glory of God. For MacKay, it is a duty for the responsible steward to plan and take action for future human beings.¹⁸

Ernest Partridge argues that it is in this generation's own self interest to have a concern for something beyond themselves.¹⁹ Self transcendence is

necessary for psychological health. To care for nothing outside oneself leads to alienation, if not narcissism, which is psychologically impoverished. He argues as well from what he calls "the paradox of morality:" that each individual benefits in a community where concern for others prevails. When one lives solely for oneself, both that individual and the society are harmed. Out of self interest in psychological and community well-being, one should be concerned about others. Partridge nominates future human beings as an appropriate recipient for that concern beyond one's present self. One may better serve oneself psychologically and prudentially by acting upon concern for future human beings. He does not explain why the group one should serve outside oneself is a future one.

For Daniel Callahan, to exclude any human beings, present or future, from our moral community invites abuses such as those of slavery or other oppression.

For Daniel Callahan, to exclude any human beings, present or future, from our moral community invites abuses such as those of slavery or other oppression. He grants that "to state that we have moral obligations to the community of all human beings introduces its own problems. One of them turns on the practical impossibility of effectively discharging obligations to all human beings."²⁰ The problem is compounded if concern for future generations of human beings is included. Yet wherever or whenever human beings may live, they are still human beings. As human beings they warrant consideration if our actions can affect them.

Callahan then goes on to emphasize that our actions will affect future human beings. The very existence of future generations depends on the present generation. The present generation has a responsibility to them due to their biological dependency and their need as fellow human beings. Callahan argues as well that this biological link incurs a further obligation — as we have received from the past so we have an obligation to pass on to the future. He labels this obligation with the Japanese term *on*.²¹ One repays the care received from one's parents by taking equal or better care of one's own children. With no exact correspondence in the English language, the term carries an idea of both gratitude and justice in passing on what the present has received in trust.

Arguments for acting on behalf of future generations have been made, then, from many perspectives including love for one's own children, utility, love of neighbor, fear of God, self transcendence, and membership in the moral community of humanity. However, not one of the above has been argued as an unqualified absolute. What else may counterbalance these claims or be distinctive about applying them to the future?

Three Major Constraints

(1) Do we have a right to make choices that affect future human beings?

Part of the difficulty of action or restraint on behalf of future generations is that members of society are making choices that have immense impact on future generations, but cannot consult the people of those generations. To choose wisely for them parallels the role of parent, but consciously acting for them would not be an instance of often rejected ethical paternalism. "Paternalism may be defined as a refusal to accept or to acquiesce in another's wishes, choices, and actions for that person's own benefit."²² One can act on behalf of future generations, but it is not possible to override expressed wishes, choices, or actions of people who do not yet exist.

Since they do not yet exist, to what degree can there still be concern for their autonomy? "Autonomy simply means that a person acts freely and rationally out of her own life plan, however ill-defined. That this life plan is *her own* does not imply that she created it *de novo* or that it was not decisively influenced by various factors such as family and friends."²³ Autonomy need not mean an isolationist ideal of autonomous existence where it is best for the individual to make decisions alone without regard to community or tradition.²⁴ Out of respect for persons, whoever they may be, they should have choices rather than be predestined to a future designed by someone else. Our society places a high value on autonomy—people should be able to shape and lead lives that are as unrestricted as possible. This is a central foundation of Anglo-American law, which is in the Lockean tradition of respect for individual persons.²⁵ In what we pass on, it is not possible to honor the autonomy of future individuals by consulting with them as we act. However, it is possible to be concerned about their autonomy as an end state. Current choices should avoid limiting the level of autonomy they will one day possess.

It is not enough to hope for *Ex post facto* consent²⁶ or ratification of our actions.²⁷ Later approval is prob-

lematic in that the intervention cannot be undone and the recipient may be substantially influenced by the received environment. Aldous Huxley referred to an extreme form of this problem in *Brave New World*. "That is the secret of happiness and virtue—liking what you've got to do. All conditioning aims at that: making people like their unescapable social destiny."²⁸ In *Brave New World*, all choices for the next generation were made and set by the controllers. People were shaped to their role rather than shaping roles and environment to the needs and desires of people. Such a concentration of choice in the hands of a comparative few, even if widespread within that generation, could limit the self-determination of future generations.

*Past generations have made
countless choices for the good and
ill of the present generation. . . .
The choice is not whether this
generation will shape the next or
not, but to what degree and in
what direction.*

Does one generation have a right to make choices so influential for future generations? The European discussion has at times led to a clear "no." In an appeal to the French *patrimoine* or the German *Erbgut*, the collective environmental heritage of human beings must remain just as received. Mauron and Thevos give the example that one cannot tear down a Gothic chapel for one's own convenience.²⁹ We should not in any way change our given heritage. Yet, in one sense, the question of right to influence is inapplicable. "The human autonomy we are required to respect is not an absolute individual sovereignty. No one has created himself."³⁰ Past generations have made countless choices for the good and ill of the present generation. This generation's choices will unavoidably shape the world the next generation enters and how they are introduced to it.³¹ The choice is not whether this generation will shape the next or not, but to what degree and in what direction. Medical intervention, which enables people with genetically based myopia, diabetes, retinoblastoma, and other diseases or disabilities to survive and bear more children, spreads those genetic propensities and diseases through the population.³² Where we build our homes and cities shapes the environment to be inherited. The present generation could refuse to restrain or act deliberately on behalf of future generations, but it can escape

neither its influence, nor the consequences of its inaction. By avoiding deliberate intervention a different heritage from what could have been is established. Some risks are avoided and others are retained.

Are there ways to protect the autonomy of future human beings? If our maintaining and shaping ourselves and the environment is incremental, no one generation would so change perception and experience as to determine all who follow. Over time one small initial change could lead to vast divergences, as Carol Tauer has projected from chaos theory,³³ but each ongoing, overlapping generation would have the opportunity to adjust before long range implications became set. By emphasizing the sustaining of the natural environment and limited change, such as the elimination of small pox, intervention could increase choice rather than narrow it. Future generations might then be even more able to adapt to their unique environment and perspective. Future choice could be increased by thoughtful intervention. The current generation would not need to master the impossible task of predicting and balancing all the preferences of future generations to a set vision.

Also, reversibility is a major concern for implementing change.³⁴ Future generations should not have to continue an earlier mistake. If environmental choices are incremental and reversible, future generations could restore a pattern that had been deleted or changed. It might be argued that some parts of our environment such as small pox have little chance of being helpful in any scenario. As finite beings considering a distant future, this may be more a case of lack of imagination than definitive judgment. Vigilant caution is in order. Out of autonomy concerns, what we pass on should not be predestined to one narrow vision.³⁵ On the contrary, we may be able in some ways to increase the autonomous choices of future generations.

(2) Do we really know what will help future human beings?

It can be argued that one's place in time should make a difference in utilitarian calculus precisely because as one goes further into the future the circumstances and desires of future generations become harder to predict. The increasing uncertainty makes the weight of such concerns of less importance. One cannot have an obligation to positively benefit remote future generations when one does not know what will benefit them.³⁶ Charles Frankel notes in particular the tendency of people under the different

circumstances of various decades to emphasize different values.³⁷ Choices of any given generation reflect more their temporary circumstances than future desires and needs.

Others have responded that while one does not know completely what will positively benefit future human beings to a considerable distance in time, one has a good idea what will harm them. The essential purpose would be to relieve burdens and in the process, as in the Hippocratic tradition of *primum non nocere*, first do no harm. Thomas Szasz has written skeptically about such a commitment in that, according to Szasz, often one person cannot be helped without hurting another.³⁸ He cites an example of prolonging the life of a patient who harms others, or correctly diagnosing a woman as psychotic to protect her husband, and then seeing her lose her freedom through involuntary commitment to a mental institution. While one cannot predict all the effects of one's actions, that does not lead to the conclusion that all choices are equally desirable, nor that random choice would be as positive in its net effect as deliberately selected choices. Szasz is assuming that life is a zero sum game with losers always in direct proportion to winners. Life may not always be a zero sum game. Even as far as it is, justice might sometimes come into play about who might appropriately bear which burdens. Conflict between general principles does not abrogate their claims. Nonmaleficence could still be an important consideration.

While it can be difficult to know exactly what will always be most beneficial to future generations, Callahan suggests that there is enough likely continuity to have a good idea at least of what would be likely to harm them. There is more ethical responsibility than merely the avoidance of harm, but that is at least a minimal place to start.³⁹ While we do not know the future situation and ideals, leaving future generations with as viable a start as possible is likely to be helpful to them.⁴⁰

(3) Are not the needs of the present already all consuming without adding concern about future human beings?

How might the competing claims between needs of the present generation and future generations be justly balanced? Would current concerns always be of the highest priority so that any effort on behalf of future generations would be postponed indefinitely?⁴¹ John Rawls suggests a thought experiment to discern fair warrants. Behind a "veil of ignorance"

one would design a long term society, not knowing what generation one would live in. The intent of the "veil of ignorance" is in essence to lead people to count others as of equal worth with themselves. Each other person counts as much as oneself in such a calculation because by the rules of the thought experiment one does not know which one is oneself. By such criteria reasonable people might choose to expect each generation to restrain its use and further invest in some improvement for the future as long as it is at minimal cost to that generation. These savings would include that without sacrificing its own welfare, each generation would set aside some resources and pass on information and culture to start the next generation off a little better than it did.⁴² Working from a standard of fairness between generations to balance needs and preferences, if each generation has equal weight, each generation would be expected to contribute "justified savings." From such a policy every generation would benefit but the first.⁴³ If the first generation's sacrifice is minimal it may not be too much to ask.

Appropriate Concerns for Future Human Beings

Considering the above discussion, we should limit further damage to what we have already received. Future generations should not start at a deficit of our creation. In the classic dictum of *primum non nocere*, first, do no harm. This would be the starting implication for the obligations of beneficence and justice that we have discussed, as well as take the above constraints seriously. Second, as we are able to, we should restore previous damage to what we have received in environment, genetics... That too would carry out beneficence and justice while minimizing dangers from ignorance or limiting autonomy. Third, attempts at improvement in carefully balanced systems such as human genetics or the environment would be appropriate only as the opportunities for them are clear. Such required clarity would recognize the immense interdependence of life, yet that it may not already be ideal. The elimination of small pox from the globe was an appropriate alteration of our environment. Intervention, in light of our evident limitations and autonomy concerns, would best be incremental and reversible over time. Concern for future human beings is not absolute, a trump card over present human needs or over other parts of creation, but future generations should be a considered part of our current reflection as we make choices that will deeply affect our society's children and theirs. ☉

NOTES

- ¹J. Brenton Stearns, "Ecology and the Indefinite Unborn," *The Monist* 56(1972): 613.
- ²R. B. Brandt, "The Concepts of Obligation and Duty," *Mind* 73:291(July 1965): 387.
- ³Carol A. Tauer, "Does Human Gene Therapy Raise New Ethical Questions?" *Human Gene Therapy* 1(1990): 414.
- ⁴*Ibid.*, 387.
- ⁵Galen K. Pletcher, "The Rights of Future Generations," in *Responsibilities to Future Generations: Environmental Ethics*, ed. Ernest Partridge (Buffalo: Prometheus Books, 1981), 168.
- ⁶*Ibid.*, 170.
- ⁷Further examples include: Martin P. Golding, "Obligations to Future Generations," *The Monist* 56(1972): 85-99 and several articles in Ernest Partridge, ed. *Responsibilities to Future Generations: Environmental Ethics* (Buffalo: Prometheus Books, 1981).
- ⁸Brandt, "Concepts of Obligation," 390-391.
- ⁹John Passmore, "Conservation," in *Responsibilities to Future Generations*, 54. For his complete argument see John Passmore, *Man's Responsibility for Nature* (New York: Scribner, 1974).
- ¹⁰Eric D'Arcy, *Human Acts: An Essay in their Moral Evaluation* (Oxford: Clarendon Press, 1963), 56-57.
- ¹¹James F. Childress, *Who Should Decide? Paternalism in Health Care* (New York: Oxford University Press, 1982), 31, 50.
- ¹²Jonathan Glover, *What Sort of People Should There Be?* (New York: Penguin, 1984), 143-144.
- ¹³Gregory Kavka, "The Futurity Problem," in *Obligations to Future Generations*, edited by Sikora and Barry (Philadelphia: Temple University Press, 1978), 201.
- ¹⁴Thomas Sieger Derr, "The Obligations to the Future," in *Responsibilities to Future Generations*, 41-42.
- ¹⁵Ecclesiastes 1: 1-10.
- ¹⁶Donald M. MacKay, *Human Science and Human Dignity* (Downers Grove, IL: InterVarsity Press, 1979), 60.
- ¹⁷*Ibid.*, 79.
- ¹⁸*Ibid.*, 58.
- ¹⁹Ernest Partridge, "Why Care About the Future?" in *Responsibilities to Future Generations*, 203-220.
- ²⁰Daniel Callahan, "What Obligations Do We Have to Future Generations?" in *Responsibilities to Future Generations*, 76.
- ²¹*Ibid.*, 77.
- ²²Childress, *Who Should Decide?*, 13.
- ²³*Ibid.*, 60.
- ²⁴*Ibid.*, 65-66.
- ²⁵Robert M. Veatch, *Case Studies in Medical Ethics* (Cambridge: Harvard University Press, 1977), 290.
- ²⁶Alan Soble, "Deception and Informed Consent in Research," in *Bioethics*, revised edition, edited by Thomas A. Shannon (Ramsey, New Jersey: Paulist Press, 1981), 364.
- ²⁷Childress, *Who Should Decide*, 93.
- ²⁸Aldous Huxley, *Brave New World* (New York: Harper and Row, 1969), 10.
- ²⁹Alex Mauron and Jean-Marie Thevoz, "Germ-line Engineering: A Few European Voices," *The Journal of Medicine and Philosophy* 16(1991): 654-655.
- ³⁰Paul J. M. Van Tongeren, "Ethical Manipulations: An Ethical Evaluation of the Debate Surrounding Genetic Engineering," *Human Gene Therapy* 2(1991): 74.
- ³¹Willard Gaylin, *Adam and Eve and Pinocchio: On Being and Becoming Human* (New York: Viking Penguin, 1990), 258-259.
- ³²Veatch, *Case Studies*, 198. J. Robert Nelson, *Science and Our Troubled Conscience* (Philadelphia: Fortress, 1980), 100.
- ³³Tauer, "Does Human Gene Therapy Raise New Ethical Questions?," 414.
- ³⁴James F. Childress, *Priorities in Biomedical Ethics* (Philadelphia: Westminster Press, 1981), 110.
- ³⁵Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974), 313-314.
- ³⁶Martin P. Golding, "Ethical Issues in Biological Engineering," *UCLA Law Review* 15:267(February 1968): 457.
- ³⁷Charles Frankel, "The Specter of Eugenics," *Commentary* 57:3(March 1974): 31.
- ³⁸Thomas Szasz, "Ethics and Genetics: Medicine as Moral Agency," *Genetic Engineering: Its Applications and Limitations*, Proceedings of the Symposium held in Davos, October 10-12, 1974, 114.
- ³⁹Callahan, "What Obligations Do We Have to Future Generations?," 85.
- ⁴⁰Kavka cites specifically biological and economic needs as continual and expected indefinitely. "The Futurity Problem," *Obligations to Future Generations*, edited by Sikora and Barry, 189-91.
- ⁴¹Golding, "Ethical Issues in Biological Engineering," 458-459. Also Alexander Herzen, as quoted in Glover's *What Sort of People Should There Be?*, 140.
- ⁴²John Rawls, *A Theory of Justice* (Cambridge: Harvard University Press, 1971), 284-293.
- ⁴³Ronald M. Green, "Intergenerational Distributive Justice," in *Responsibilities to Future Generations*, 95.

The experiences of science and Christian faith in . . .

ONE WHOLE LIFE

The Personal Memoirs of Richard H. Bube

In this book, Professor Emeritus Richard H. Bube sets forth — in a personal and integrated way — the various facets of his life: human being, son, brother, Christian, friend, husband, father, scientist, author, teacher, and grandfather. It contains narrative, reminiscences, vignettes, and examples of unpublished poems, stories, and talks. A striving for honesty and authenticity underlie the approach.

His life has involved Christian commitment, witness, and teaching in churches and colleges; scientific research and teaching at Stanford University as Professor of Materials Science and Electrical Engineering; and ASA service as President and Editor. 530 pp. Privately published.

For your copy, send \$25 to cover costs to: R. H. Bube, 753 Mayfield Avenue, Stanford, CA 94305.