

Fundamentals of Ethics

FOR SCIENTISTS AND
ENGINEERS



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Fundamentals of Ethics for Scientists and Engineers represents a new approach to introductory ethics that is both practical and accessible. Classical virtue theory is employed to provide a time-tested, simple, and easily remembered basis for ethical reasoning. The text is modularized for easy use in both stand-alone ethics courses and as self-contained units within engineering core courses. The text is accompanied by an instructor's manual that includes a comprehensive set of sample lectures and course assignments, detailed homework solutions, and many helpful hints for teaching an ethics course.

To ground the ethical analysis in practical reality, each chapter contains a real-life case together with several fictional cases. The fictional cases breathe renewed vigor into the study of ethics by employing a new learning device: the "ethical serial." Each fictional case can be understood individually, but the cases are also unified by the use of a single set of college-aged characters whose personalities are developed throughout the book. These characters mimic real people far more closely than those in other texts and act in situations that are directly familiar to students.

The book is composed of four units. The first two focus on ethical reasoning, outlining within the context of science and engineering the notions of character formation and intention central to virtue theory. To prepare students to handle complex ethical questions, these units extend virtue theory in a readily understandable way, accounting systematically for the consequences that follow an ethical decision. The second two units focus on practical issues such as intellectual property, conflict of interest, whistle blowing, and authorship in scientific publication. These units also treat more advanced topics like risk, resource allocation, conflicting ethical methods, and intuition in ethical decision making.

ABOUT THE AUTHORS

Edmund G. Seebauer is Professor of Chemical Engineering at the University of Illinois at Urbana-Champaign. Author of about 75 publications and one patent in surface science and microelectronic processing, he is the first to successfully use measurements of surface chemical kinetics in ultrahigh vacuum for quantitative a priori process development. He has received awards in both science and engineering including an NSF Presidential Young Investigator Award, a Sloan Foundation Fellowship in chemistry, and an Inventor Recognition Award from Semiconductor Research Corporation. He also holds two awards for undergraduate teaching.

Robert L. Barry is a well-known ethicist who has appeared on national television programs such as *Face the Nation* and *Meet the Press*. He holds the rank of Lt. Colonel in the US Air Force Reserve and regularly develops programs in ethics education for Air Force commanders. He has written extensively in various fields of ethics, contributing to more than 70 articles and three books. He was a National Endowment for the Humanities fellow and has taught for many years, most recently at the University of Illinois at Urbana-Champaign.

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CASES: THE REST OF THE STORY

Martin Diesirae and **Myra Weltschmerz** both graduated at the end of the semester. With regard to the APZ aluminum polish (Case 14.3), Martin and Conrad finally agreed to say nothing to their customers about the reformulation. No problems materialized. Myra did decide to take a plant trip to the company with the bad environmental record (Case 15.2). However, she interviewed poorly there and was not offered a job. Martin and Myra stayed the summer in Exodus, he working for Tripos Metal Polish full time and she baby-sitting for Dolores Sola and working other odd jobs. By the following September they both found jobs appropriate to their degrees in the Chicago area. They moved there, and got married a year later. They had twins shortly thereafter, and Myra quit her job to stay at home until the children began school. Martin never really shed his rough edges, and Myra never gained full self-confidence. They drifted in and out of marriage counseling, and separated briefly, but never divorced.

For **Emily Laborvinctet**, the tape-recorder incident with **Todd Cui-bono** turned out to be the last straw (Case 15.1). She refused to loan him the recorder, and dumped him for good measure. She completed her chemistry degree and went on to get an MBA. She worked as an international business consultant for several years, marrying someone at her firm. Shocked by the breakup with Emily and unexpectedly foiled in his plan to get his coworkers fired, Todd quit Pandarus Pizza. He completed his degree in chemical engineering, found a job with a big company, and moved rapidly through the managerial ranks, ultimately becoming senior vice-president. He waded through great self-inflicted difficulties in his relationships outside work, however.

Terence Nonliquet finished his degree in electrical engineering and went on to graduate school in the same field. He eventually became a professor in that field in a teaching (not research) university, well liked by his students. He did not marry until his late 30s, but lived happily with his stay-at-home wife and three children thereafter.

Leah Nonlibet decided to keep her job in Professor Clark's laboratory (Case 15.4). A year later she graduated in geology and found a job with a small firm that contracts to companies that drill for oil. She ulti-

mately became a successful mid-level manager. She had several lengthy relationships, but never married. Throughout her life she retained a vague sense of discontentedness, but could never really act to dispel it.

Celia Peccavi took the part-time job putting consumer products on rabbits (Case 15.3), but in school drifted from major to major. She eventually graduated after five and a half years with a degree in finance, and she found a job with a local bank in Exodus. Her personal life lurched from one swirling tempest to another.