
I Principles

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1 Fundamentals of ethics: the use of virtues

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Virtue is its own reward. Cicero (1064–1063 CE),

De Finibus

Habits change into character. Ovid (43 BCE–18 CE),

Heriodes

1.1 THE IMPORTANCE OF ETHICS IN FOOD SCIENCE

There are both instrumental and intrinsic reasons why those involved in the study and production of food should cultivate ethical skills and practices. Instrumentally, good ethical behavior usually leads to good consequences for ourselves, our organizations, and the larger world. For example, Temple Grandin describes in Chapter 7 why humane treatment of livestock is good for business. It is true that unethical behavior can pay big dividends at times, especially in the short term. However, injustice and careless ethics lead mainly to suffering in the end. The case of peanut recall due to salmonella described in Chapter 14 provides a good example. Those involved in the study and production of food make decisions crucial to society at large, and therefore shoulder an enormous burden of public trust. From an intrinsic perspective, satisfaction comes from reasoning through an ethical problem, choosing a good course of action, and following through. Of course, people can do good based upon gut instinct alone. As thinking beings, however, many people find more satisfaction in understanding why they do what they do. Over 2000 years ago, Aristotle identified good ethical thought and action as the ultimate source of human happiness.

Many professional societies and corporations use formal codes of ethics. These codes have real value as reminders of the ethical standards expected in the work place, and as ways to instill those standards into new members. As public documents, codes serve as a basis for taking formal or legal disciplinary action against violators. However, codes are limited in what they can accomplish. For example, no list of guidelines can possibly cover all the complex situations that can arise. Moreover, code-based ethics sometimes leads to minimalism, which is the idea: “If it’s not specifically forbidden, it

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must be allowed.” In addition, some situations call for on-the-spot decisions, with no time to consult a guidebook. These shortcomings point to a need for ethics that spring habitually from inside the individual, and do not depend upon some external list of rules. Strong ethical character makes it easier to rapidly and consistently handle complicated situations not listed in a code.

1.2 ANTHROPOLOGICAL FOUNDATIONS OF ETHICS

Ethical principles and methods of reasoning necessarily rest upon important presuppositions about the nature of human thinking and how it influences behavior. In other words, there are anthropological foundations to ethics. An anthropology is basically a model for the person. Even among groups of individuals who are well intentioned, differing anthropologies will lead to different principles and methods, which in turn will lead to different ethical conclusions. For example, anthropological considerations underlie much of the discussion in Chapter 4 on East Asian perspectives in food ethics, and again in Chapter 7 on the humane treatment of livestock.

The presentation of virtue ethics in this chapter uses an anthropology that conceptualizes the psyche as a unity of mind, emotions, and will. Other anthropologies exist as well, some having origins that are very ancient. Here are a few examples of anthropologies that currently find use.

- *Anthropologies based upon psychology:* A comprehensive anthropology should account for the psychology of human development. In fact, many models exist to account for the development of ethical behavior. A good summary of developmental theories can be found in Helminiak, *Spiritual Development: An Interdisciplinary Study* (1987). Choosing among them affects the attribution of moral responsibility. For example, at what point do teenagers become fully responsible for their eating habits, and how does this impact the ethical marketing of food? A complete anthropology should also account for psychological disorders like psychosis, depression, compulsion and autism. Once again, various models exist. But there is evidence (often controversial) that certain components of a person’s diet can influence the severity of such disorders.
- *Anthropologies based upon natural observation:* Some anthropologies incorporate only observations that can be made in the natural world. In this view (sometimes called positivism), people represent no more than the aggregation of their constituent molecules, and disappear completely at death. Ethical behavior is then framed in terms of human pleasure, survival of the species, and the like. Such anthropologies often have a scientific appeal, but also suffer from problems with justifying why people should do good in the face of undeserved suffering and uncertain rewards.
- *Anthropologies based upon the supernatural:* Some anthropologies presuppose a realm that exists beyond the observable world. The most well-known of these anthropologies stem from long-standing religious traditions. Others include shamanism and witchcraft. Several support ethical systems that prohibit certain foods. Although such anthropologies can fill the gaps in purely natural anthropologies, these systems cannot be verified by systematic measurement. Thus it becomes difficult to choose among them and the ethical systems they imply.

Many arguments about ethics are fundamentally rooted in differing anthropologies. However, since the anthropology underlying a particular ethical position is sometimes only tacit, it is easy to wrongly assume that the opponents are ignorant, obstinate, or malicious.

Ethical reasoning must presuppose not only an anthropology but also a method. Space does not permit a detailed treatment of the methods commonly used today, but some examples include deontology, casuistry, utilitarianism, rights-based approaches, and intuitionism. For a convenient and detailed summary, see Frankena (1972). Among all these methods (other than virtue ethics), only intuitionism pays significant attention to aspects of ethics that are internal to the person.

How should we choose among all these different anthropologies and methods? Although they often conflict with each other, each brings a perspective that contains an important kernel of truth. One approach focuses on similarities in the approaches, and argues that each perspective represents just one portion of a single, deeper ultimate reality. This view is tantamount to monism – the belief that reality is a single fundamental entity. Whatever truth this idea might hold, it tends to gloss over major differences in practical moral rules. Such glossing represents a serious problem that often leads to a superficial approach to ethical living. Another approach is to assert that all ethical systems have equal validity. This view is tantamount to relativism. Relativism has had many defenders over the centuries, beginning with the Sophists of ancient Greece. More recently, this view has sprung from a belief that truth represents no more than a culturally conditioned phenomenon with no objective validity. One major danger of relativism has been known since the time of the Sophists. Thrasymachus held that the appearance of justice serves only as a veil to protect the interests of the strong (Stumpf, 1982). In other words, a world where all forms of ethics are considered equivalent devolves a world dominated by raw power.

Yet ethical diversity in the present world remains an established fact. It probably makes sense to just accept this fact, and to choose a good anthropology and methods. Having made this choice, we should try to adhere to it consistently.

What about those whose approaches differ from one's own? The analogy between furniture making and ethical living may prove helpful. Both undertakings represent a craft. Several good ways may exist to build a cabinet, but some ways are better than others and some ways miscarry completely. Likewise, there are several good approaches to crafting an ethical life. Experts in this craft admire and learn from each other's actions, in the way that skilled furniture makers can admire and learn from each other's handiwork. There should be no issue of trying to "convert" someone else from his or her fundamental perspective. Of course, even casual observation of the world shows that experts in the ethical life are few. It makes sense for those who are not yet expert (but want to be) to find a master artisan and attend closely to what he or she does.

1.3 THE VIRTUE ETHICS MODEL FOR THE PERSON

We cannot expect any single anthropology to depict every aspect of how people behave. Instead, we must employ a simplified model. For a more complete treatment of this and other subjects in this chapter, see Seebauer and Barry (2001). As with any scientific

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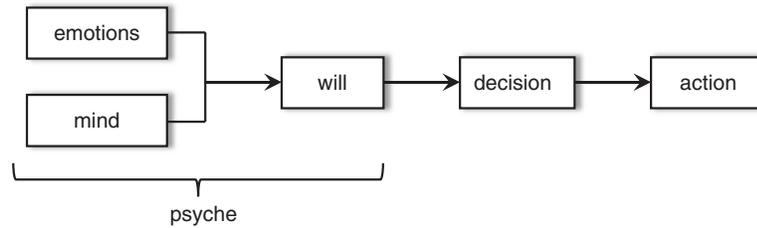


Figure 1.1 A simple model for ethical action.

model, it is useful to decide the degree of accuracy to which the subject should be represented. More accuracy usually entails more complexity in the model. In general, good models correspond to reality under most circumstances with only modest effort. Well-known examples from the natural sciences include the ideal gas law, classical Newtonian mechanics and the “lock-and-key” model for enzyme action.

The anthropology that underlies virtue ethics is quite simple and was originally developed by the ancient Greeks. The person comprises the senses and the psyche. The five senses provide raw data about the outside world. The psyche compiles these data into a coherent perception and understanding that we typically call “consciousness.” As shown in Figure 1.1, the psyche has three components:

- *Mind*: The mind corresponds in some ways to a computer; with logic and memory functions. The mind classifies abstract concepts and uses them according to logical rules. In ethical decision-making, the mind integrates data from the senses with past memories to predict what could happen in the future.
- *Emotions*: The emotions are conscious, nonrational psychic responses to data from the senses and to various sorts of internally-driven neurochemistry (sickness, hormonal swings, psychoactive drugs, and the like). Many emotions induce physical responses, such as sweating or blushing.
- *Will*: The will decides among alternatives presented to it by the mind as influenced by the emotions. Using the will typically involves rational thought, and so the will might seem to be part of the mind. But emotions cause the decision-making process in humans to differ greatly from that in computers, so most ethics writers consider the will to be distinct from the mind.

How does this unity of mind, emotions and will function in an ethical decision? Many observers over the centuries have recognized that the ability to make an ethical decision often does not involve a lengthy, drawn-out mental process for each choice. Rather, many simple ethical choices occur with little thought because they have become habitual. That is, the will, mind and emotions regularly coordinate for nearly effortless ethical action.

Such habits regulate more complicated aspects of ethical decision-making as well. In Aristotle’s view, a category of good habits exists for each of the three parts of the psyche. Each category represents a *virtue*. In other words, a virtue is the habitual direction of one part of the psyche toward ethical good. In simple situations, a virtue makes good

ethical action nearly effortless. In more complex situations where the best choice may not be clear, a virtue makes discerning a good solution easier.

1.4 THE FOUR CLASSICAL VIRTUES

Because of the interplay between the mind, will, and emotions, good actions rely upon all the virtues. Nevertheless, classical ethical thought identifies four primary virtues. Each one is rooted in a particular component of the psyche. These four typically bear the name “cardinal virtues” or “natural virtues.” The ancient Greeks observed that each of the natural virtues promotes actions lying somewhere between excess and deficiency.

- *Justice*: Justice connects with the will and has two aspects: truth and fairness. Acting in truth recognizes the world as it actually is and rejects mere appearances. Acting with fairness seeks to give that which is due to everyone involved.
- *Prudence*: Prudence connects with the mind. A prudent mind thinks about a moral problem lucidly and thoroughly. The mind must also supply itself with enough time to think and must apply itself at the appropriate level of detail. Hence, prudence involves forethought and practicality.
- *Temperance and Fortitude*: Temperance and fortitude represent opposite sides of the same coin; both connect with the emotions but from opposite perspectives. Pleasant emotions (like elation, affection, and enjoyment) draw us toward their origin, while unpleasant ones (like dread and sorrow) push us away. Temperance controls our reaction to appeal, tamping down the impulse to move recklessly toward something we like. Fortitude controls our antipathy, tamping down the impulse to move recklessly away from something we dislike.

In describing the virtues, we need to maintain a balance between their aspects of choice and habit. Exercising the virtues can be likened to breathing the air; both activities transpire largely unconsciously. Yet breathing can be brought under conscious control if we choose. For example long-distance runners consciously regulate their breathing. In the same way, people typically act habitually, but retain the capability to consciously regulate their ethical behavior. That is, although we might routinely act with prudence, temperance, fortitude, and justice, we can also elect to do so.

1.5 THE ROLE OF INTENTION

As mentioned above, virtue ethics concerns itself not only with habits but also with internal intentions. Intentions are especially important in cases wherein the virtues must be consciously brought to bear. In such situations, a person’s intention plays a key role in determining whether a particular action is ethical. Indeed, ethicists over the centuries have attached great importance to intention in assessing the goodness of an action. A few simple examples will illustrate why. People typically become much angrier with someone who deliberately enters incorrect data into a spreadsheet than with someone who does so accidentally. Most legal systems account for intention by differentiating

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between voluntary and involuntary manslaughter, for example, and between tax evasion and accidental underpayment of taxes.

Note that “intention” can be understood in multiple ways. Many ethicists define intention as the purpose of an action. That is, intention is the answer to the question, “What is this action attempting to accomplish?” However, sometimes people do things with several goals in mind. In other words, an action can have several intentions. In such cases, it is useful to employ a different definition of intention. The goals of an action can almost always be described as specific consequences. For example, if someone has the goal of developing a larger vocabulary, the action might be the study of word lists, and a consequence might be learning the definitions of two hundred new words. Phrasing goals as specific consequences enables the systematic identification of intentions as answers to the question, “To which consequences do we give approval?” (Some ethicists use the word “consent” instead of “approval.”) That is, we can identify intentions by examining attitudes toward the consequences of an action. We can categorize such attitudes in one of four ways: approval, disapproval, mixed, and indifferent. These attitudes differ from mere feelings, be they positive, negative, conflicted or neutral. For example, it is possible to feel bad when reporting a coworker for stealing, but it is also possible to simultaneously approve of the consequence of justice that follows. Since the ability to choose resides in the will, approval and disapproval are chosen intentions of the will rather than reflexive responses of the emotions.

1.6 MAINTAINING THE HABIT OF ETHICAL BEHAVIOR

Virtue focuses on the theme of habit. That is, acting voluntarily tends to internalize a behavior pattern that makes this action easier to do in the future. This process of internalization undergirds the old saying, “You become what you do.” In the same way, doing something that has ethical significance has the consequence of imprinting a behavior pattern. Such imprinting occurs because acting on a decision, and to some extent even making the decision, exerts internal effects. This latter point is recognized in criminal law, which punishes conspiracy to commit murder as well as the act of murder itself. Even if a plan for murder never comes to fruition, the planning itself imprints the conspirator in a way that makes murder more likely in the future.

Human behavior does not obey fixed mathematical rules, of course, and under most circumstances people can choose to control their actions in spite of habit. As suggested above, an analogy exists between acting ethically and breathing. Ordinarily we breathe without thinking, but within limits we can choose to control our rate and depth of breathing. Even though a decision may affect others that follow, this effect occurs only in terms of likelihoods, not certainties. Yet studies from the social sciences show that a convicted criminal is more likely to commit a crime in the future than someone with no record. And a one-time user of illicit drugs is more likely to continue to use such drugs than a zero-time user.

Although acting according to the virtues in one case makes it easier to behave this way again, a certain degree of effort is always required. Muscles weaken without such effort, for example, and so does the ethical will. Thus, if we just try to “get by” in the ethical arena, without continually trying to improve, backsliding typically occurs sooner

or later. Rarely can an “ethical athlete’s” good conditioning remain static at a fixed level; usually an athlete’s capabilities are either improving or declining – sometimes rapidly and sometimes barely perceptibly. Thus, it is important to avoid doing the bare minimum just to get by in the ethical life. For example, such minimalism was an important issue at play in the recent firing of the famed collegiate sports coach Joe Paterno at Pennsylvania State University (Seebauer and Barry, 2001).

But does acting above the bare minimum call for the practice of benevolence? Benevolent actions seek what is best for others without any anticipation of return. Defined this way, benevolence certainly deserves admiration, but is it required? This question has been debated for centuries, and some ethical systems promote benevolence as the highest good. Most, however, concede that some degree of self-interest can legitimately enter into an ethical decision. In other words, benevolence is a worthy aspiration to pursue insofar as possible, as guided by the virtue of prudence.

1.7 APPLICATIONS OF THE VIRTUES

The following sections offer specific examples of each of the four classical virtues. In the case of the virtue of justice, examples are given focused on both key dimensions: truth and fairness.

1.7.1 Application of the virtue of justice (truth): scientific publication

Most scientists pursue their work at least partly from intrinsic desires to learn, and to share discoveries for the benefit of all people. However, many scientists are also motivated by tangible rewards as well. Since the communal ownership of scientific knowledge sometimes limits the profits a scientist can earn from a discovery, the primary tangible reward for innovation often lies in public recognition. This recognition accrues to the individuals who show they were first to observe and recognize the significance of valuable new knowledge.

The reward for priority in publishing infuses a healthy energy and originality into many scientific endeavors. While recognizing this fact, scientists often remain suspicious of efforts to win professional or public fame (Vera, 2011). As an example of such modesty, Isaac Newton wrote, “If I have seen farther, it is by standing on the shoulders of giants.” (in a letter to Robert Hooke, who was challenging Newton’s claim to have invented the theory of colors) (Koyre, 1952). Sigmund Freud described the reward for publishing first as an “unworthy and puerile” motivation for scientific effort (Merton, 1973). Nevertheless, many people (including scientists) crave tangible expressions of approval for what they do. As a result, the drive for priority in publishing can become an end in itself rather than a means to inspiration. Is it really so important when one scientist publishes a few days or weeks ahead of someone else? The distinguished sociologist of science Robert Merton (1973) put it this way:

The fact is that all of those firmly placed in the pantheon of science – Newton, Descartes, Leibniz, Pascal or Huygens, Lister, Faraday, Laplace or Davy – were caught up in passionate efforts to achieve priority and to have it publicly registered.

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Clearly these pressures of publishing can corrode the truth aspect of the virtue of justice. Several sorts of actions offend against these ideals. For example, fraud or falsification in public work is clearly wrong. Such actions strike at the heart of scientific truth. It is of course necessary to distinguish between reports that are unintentionally incorrect and those that are deliberately counterfeited. The literature is replete with results that ultimately proved to be incorrect due to accidental errors. Falsified results are simply fabricated out of nothing. Fraudulent data are genuine, but were not collected by the stated method. The fraud usually involves removing or manipulating in a way that Charles Babbage once called “cooking” and “trimming” (Merton, 1973). While cooking or trimming data without good reason is clearly unethical, more complicated ethical problems arise when scientifically plausible reasons exist to eliminate or recalculate certain data. Sometimes measurement instruments have easily recognizable but sporadic problems. Other times, changes in procedure slink into the experiment, either by intention or by error. Some experiments are just too arduous or costly to repeat. Given the length limitations imposed by some journals, it may prove impossible to describe the analysis fully. Prudent judgment must be exercised – the literature does not benefit from avalanches of questionable data.

High-profile cases of fraud and falsification have arisen in recent years. For example, in 2011 the Office of Research Integrity at the US Department of Health & Human Services released a report detailing an elaborate scheme of fraud and falsification perpetrated by a chemistry graduate student at Columbia University in order to publish work related to C–H bond functionalization (Schultz, 2011). As a result of a lengthy and extensive investigation by the university and the Office of Research Integrity, the student’s doctoral advisor had to retract roughly a half dozen published papers, and the student’s PhD degree was revoked.

Plagiarism also counts as a clear offense against truth. Plagiarism involves paraphrasing or directly copying the words or results of someone else without appropriate citation. Some researchers include in their definition of plagiarism the frequent practice of intentionally failing to cite closely related work by others. The ethical question of course depends upon how strongly related the work is. It is difficult to determine the incidence of plagiarism in the literature. However, it is notable that charges of stealing scientific ideas seem to be more common than the actual theft itself (Merton, 1973)! Accusations of plagiarism have been well-known since the time of Descartes in the 1500s, who was falsely accused of pilfering ideas from Harvey, Snell, and Fermat respectively in physiology, optics, and geometry (Merton, 1973). Not all such claims are spiteful. The human imagination often takes new ideas and packages them into well-established boxes, thereby making them seem familiar.

1.7.2 Application of the virtue of justice (fairness): resource allocation

Resource allocation takes place continually in the workplace, and is regulated by a principle that ethicists call “distributive justice,” although “distributive fairness” might be a more accurate expression. Ethicists have wrestled with the problems connected with resource allocation for a very long time. No general resolution has materialized. Therefore, this discussion will only highlight some of the principal lines of thought on

this issue. Circumstances and intentions make considerable difference in deciding which approach to use.

This discussion uses the word “resource” to refer to an item that is measurable and is available to several or many people. This perspective excludes qualitative items like credit or prestige. Examples of resources include:

- *Money*: Organizations of all kinds need to allocate salary among employees and revenue streams among operating units. Funds may need to flow into research and development, daily operations, taxes, investments, or materials and supplies. Closely related to money are jobs and the salaries that go with them. Chapter 10 of this book examines in detail some questions revolving around casual employment and low pay in the food/catering industry. Ultimately those questions originate in resource distribution.
- *Consumables*: These include food, water, medicine, energy, and virtually any other tangible item needed for human existence. In food production, typical examples of consumables include feedstocks, electricity, and fuel.
- *Time*: On the job, scientists in the food industry decide how much time to give to laboratory experiments, group meetings, training opportunities, safety and cleanup, and socializing. This distribution involves not only the hours themselves but also the ability to offer genuine attention.
- *Space*: Space allocation for laboratories and offices presents a continual challenge in most work environments.
- *Services*: Service resources may include biological or chemical analyses, administrative support, and technical support from machinists and consultants.
- *“Negative resources”*: Negative resources spring from collective responsibility for a debt or other financial liability. Any quantifiable liability can be considered from this point of view: requirements to provide space, administrative services, and the like. Some dangers like process effluents and waste streams can also count as negative resources.

Numerous methods have been described for resource allocation. Sometimes more than one method is used in the same situation. Examples of the primary methods include (Outka, 1974):

- *Allocation by merit*: Allocation by merit views resources as rewards that should be distributed according to effort or demonstrated ability. Examples include job offers, salary raises, promotions, and protection from layoff. However, allocation by merit breaks down for resources that are necessary for living, such as food, water, and housing. Use of merit principles under unsuitable circumstances can lead to the abrogation of basic human rights, and discriminates against people or groups who are disadvantaged through no fault of their own. In destitute regions of the world, for example, it would be impermissible to deny children food because they are not as productive as adults.
- *Allocation by social worth*: Allocation by social worth directs resources toward those who appear most likely to contribute to the common good, usually in ways that do the greatest good for the largest number of people. Possible standards for social worth include age, seniority, rank, and expertise. In exceptional cases of natural disaster or

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war, for example, social worth preferentially directs food, water, and medical attention to political and military leaders and to physicians to help preserve overall social order and health. Social worth sometimes correlates with merit, so the distinction between these two approaches can become indistinct. Allocation by social worth breaks down when the criteria for worth disregard basic human rights. For example, if wealth is used to measure social worth, fundamental resources such as food, clean water, energy, and education will “flow uphill,” exacerbating imbalances that already exist.

- *Allocation by need:* Allocation by need views resources as basic human rights, meaning that every person has the same right to some modest level of a given resource. Examples include the needs for food, clothing, and shelter. This approach is often active after natural disasters, where the weakest and sickest receive the most consideration. Allocation by need breaks down when this standard is applied so rigorously that it removes the motivation to produce. Those who produce the most sometimes have the fewest needs, and in such cases allocation by need can greatly reduce this motivation. When the most productive members of an organization lose their incentive, the organization suffers.
- *Allocation by ability to pay:* Allocation by ability to pay views resources in terms of market forces, and in certain ways represents a cross between merit and need. Merit factors in because those who produce more can afford to pay more. Need factors in because those in greater necessity are often willing to pay a greater price. An obvious example of distribution by ability to pay is a black market. Allocation by ability to pay typically works well for nonessential items, but fails when there is not a fair distribution of wealth at the outset. An ability-to-pay approach merely perpetuates these established injustices. The problem is especially severe when ability to pay governs the distribution of essentials like food, clean water and medicine.
- *Allocation by equal or random assignment:* Allocation by equal or random assignment presupposes that no impartial way exists to distribute resources. Equal assignment can be used for items that can be divided into very small amounts, such as food, water and money. The resource is partitioned into as many identical portions as there are people. Random assignment finds use for items that cannot be divided, including homes, jobs, and doses of medicine. This method typically uses a lottery system that offers everyone an equal chance. Equal or random assignment are free from personal biases. However, these methods abandon any attempt to account for authentic differences in other factors such as merit, need, and the like. Equal or random assignment both seek to avoid the challenging ethical choices presented by these factors. Sometimes good practical reasons exist to justify this approach, but other times the practice is grounded in ethical spinelessness. Equal assignment breaks down when each portion of a resource is too small to be useful. For example, dividing a store of infant formula into small portions during a famine could make each portion so small that no one benefits. Random assignment fails when by lucky fortune certain people wind up with the lion’s share of the resources while others receive almost nothing. Sometimes resources are distributed only rarely – for example, chances to interview with employers through college placement offices. A lottery scheme for distribution can occasionally give some students several times as many interviews as others.
- *Allocation by similarity:* Allocation by similarity is actually an approach to utilizing other methods of distribution (by merit, need, etc.) rather than an independent method.

Allocation by similarity only says that cases that appear to be the same should be treated in the same way. For example, if during the aftermath of a hurricane it is decided to allocate food according to need basis, similarity indicates that clean drinking water be distributed the same way. Although allocation by similarity may seem quite reasonable, there can be problems with deciding which cases are similar and which are not. Real-world situations are typically complicated and are rarely exactly alike.

No simple algorithm for allocation can assure fairness in all cases. The best approach depends upon what needs to be distributed and on the specific circumstances of each situation. Intentions also need to be taken into account. Yet one important principle should be kept in mind when selecting an allocation method: the obligation to avoid what is bad outweighs the obligation to do what is good. This principle underlies the long-held rule for the physician treating an ailing patient: “Do no harm.” Tom Nairn discusses related ideas in Chapter 2 on medical ethics. Other examples include early systems of law like the Code of Hammurabi, which focused upon which evils to shun rather than which goods to pursue. This practice continues to the present; most codes of law say much more about what people should *not* do than about what they *should* do. In addition, it has been observed that people are more willing to accept risk to avoid harms than to preserve benefits (e.g. Rowe, 1979), and to exert more effort to avoid a loss than to secure a gain.

1.7.3 Application of the virtue of prudence: cooperating in the unethical behavior of others

Ethical questions pose special difficulties when we are pressured to cooperate with an injustice pursued by someone else. For example, you may see a coworker doing something wrong in a situation where the ethical stakes are very high. You may see (or be pressured to facilitate) blatant offenses against safety, environmental standards, work-place equality, and the like. Sometimes these wrongdoings take place with the tacit or explicit endorsement of management. To stop them would require you to appeal to very senior levels of management or to oversight agencies outside your organization. Such an appeal is commonly termed “whistleblowing.”

Whistleblowing presents a difficult ethical choice. Often the options reduce to “should I say something to stop these wrongs and risk retribution, or should I remain quiet and stay out of trouble?” Several studies of whistleblowing show that whistleblowers typically face hostility within their organization and often leave their jobs, voluntarily or not. In academic research, about 12% of whistleblowers who face opposition ultimately lose their jobs – according to a 1995 survey conducted by the US Department of Health and Human Services. However, the most common response to whistleblowing is pressure to drop the charges and/or countercharges (see Glazer, 1997). Lasswell and Harnes (1995) present a compelling example case in which a whistleblower was harassed and fired by his employer. Eventually the whistleblower sued and was awarded \$13.7 million.

Thus, lawsuits are often involved. But remaining silent in the face of wrongdoing does not stop the misconduct and gnaws at the conscience.

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Few general rules exist to promote or discourage whistleblowing, and most situations must be examined carefully on a case-by-case basis according to the virtue of prudence. For example, the perceptions of others must be taken into consideration. There can be situations where someone can perform an action that by itself would not be wrong, but where others might misunderstand what is happening and conclude that the action is wrong. Most ethicists agree that because of the potential severity of the retaliation, whistleblowing is praiseworthy but is not required under all circumstances. However, one standard does apply: the duty to blow the whistle increases as the gravity of the wrongdoing increases (Seebauer, 2001, 2004).

Such problems of cooperating in wrongdoing arise frequently, leading to the development of well-defined concepts for classifying degrees of cooperation. This taxonomy introduces no new principles into virtue ethics, but provides a useful means for looking at such problems. Cooperation with injustice can be classified into three categories:

- *Mediate material cooperation*: Here we disapprove of the injustice we see another person doing, and our own actions would customarily be considered good or neutral. Also, our actions should provide nothing essential for the injustice to occur, and should be only remotely connected with the situation. Classical moral writers generally consider this kind of cooperation to be acceptable given adequate reasons.
- *Immediate material cooperation*: Here we disapprove of the injustice we see another person doing, and our own actions would customarily be considered good or neutral. However, now our actions provide something essential for the injustice to occur. Such cooperation is generally considered acceptable only for serious reasons. Crucial factors include the degree of your role, the degree of harm caused by not cooperating, and the likelihood of giving a bad example to others.
- *Formal cooperation*: Here we approve of the injustice and also provide something essential for it to occur. Furthermore, under ordinary circumstances our actions would be considered morally bad. Such cooperation is generally considered to be unacceptable.

1.7.4 Application of the virtue of temperance: risk

The virtue of temperance is required when the potential for profit (especially in the short term) is strong, but the possibility for harm is significant. In the food industry, for example, harms can arise from low-level chemical and biological contamination, or from severe food allergies that are rising in the general population. The harms may be inherent in the products themselves, or may arise through the production process. Determination of the acceptability of risk involves the virtues of prudence and justice. Persistence in undertaking such determinations may involve fortitude. But abiding by an adverse determination requires temperance against the allure of short-term gain. For an account of the broader risk that technology poses to the way people themselves, see Lewis (1946), and for a more recent account of the risks of technology, see Childress (1981).

Risk in the food industry is often considered within the context of “safety.” “Safety” is an abstract term with physical, psychological, and economic aspects. “Risk” is similarly abstract, and in common speech refers to virtually any threat to safety. Well-grounded ethical analysis requires a common and precise understanding of what

these terms mean. This common understanding may be difficult to achieve. It has been well documented, for example, that technologists understand “risk” differently from the general public. The common technical understanding of risk is the probability that some given harm will occur. For example, risk might refer to the probability that a particular level of food additive causes cancer in a large population. By contrast, laypeople tend to incorporate ethical importance into the concept of risk. Thus, the risk that harm will occur includes both likelihood (loosely defined) and ethical importance. Recently some ethicists have started to view risk as the “mathematical” product of importance and probability; see for example, Lowrance (1980). Furthermore, laypeople often do not distinguish clearly the risk itself from the acceptability of risk. Risks tend to be interpreted as less acceptable if they are difficult to understand, unfairly distributed, in close proximity (Martin and Schinzinger, 1986), or not within direct control.

Martin and Schinzinger follow Lowrance (1980) in plotting a harm/benefit function, which has thresholds near the neutral point of small harms or benefits. The lack of effort below the threshold on the harm side originates from the human propensity to ignore small harms in order to avoid anxiety overload. Martin and Schinzinger propose a (smaller) threshold on the gain side that represents a combination of inertia and “generosity” that inhibits people from instantly seeking selfish gain. These thresholds vary with the circumstances of individuals. Unfortunately, in some cases the difference in perspective between technologists and laypeople is too big to span in a timely way (Slovic *et al.*, 1980), causing real problems for technical projects.

Risk has become a front-burner social issue only during the last few decades, and no generally accepted approach has emerged. But certain guidelines for handling risk operate in almost all cases. First, increasing risks may be accepted only when the possible benefits increase proportionately. In other words, one cannot take large risks to secure small benefits. Second, there must be diligent attempts to obtain informed consent when consumers are involved. Fully informed consent is sometimes very difficult to obtain. If the risk is significant, the requirement to obtain fully informed consent increases accordingly.

1.7.5 Application of the virtue of fortitude: ethical responsibility

The virtues of justice and prudence often give clear guidance about what the proper course of action should be. But sometimes, fully assuming the ethical responsibility to take that path is arduous or rouses opposition. Pursuing the right path with consistency often requires the virtue of fortitude. Several other chapters in this book describe such cases. For example, Chapter 8 discusses environmentally sustainable food production, which often requires investments in extra research or manufacturing processing. Such well-intentioned investments do not always pay off. In one case, Frito Lay created a new type of compostable food packaging material as a way to reduce waste in landfills. But consumers did not like the packaging because it was perceived as too noisy when being removed. Considerable fortitude was required for Frito Lay to persist in trying to gain consumer acceptance, although the material ultimately had to be abandoned. Food manufacturers have devoted efforts to develop ingredients and processes to reduce the amount of salt and fat in foods. As consumers have shown they like the taste

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of salty foods with high fat, fortitude is required to make the foods more healthful. Several beverage manufacturers are trying to put more healthful vegetables into consumer drinks – again in the face of uncertain rewards.

It is worth noting, however, that there are factors that can limit the ethical responsibility an individual or an organization has in a given situation. In classical moral thought, ethics concerns the goodness of voluntary human conduct that impacts the self or other living beings. The word “voluntary” is very significant, because it implies there is adequate control over what is being done. Assuming there has been no deliberate attempt to remain ignorant, powerless, or indifferent, an individual or organization has complete ethical responsibility for what is done with adequate knowledge, freedom, and approval. This criterion for responsibility points to three potentially limiting factors.

- *Lack of knowledge*: Lack of knowledge that limits ethical responsibility takes two forms: legitimate ignorance of key aspects of a situation, or ignorance that an action is unethical.
- *Lack of freedom*: Threats of physical or psychological violence by others can remove freedom, as can the influence of alcohol or drugs or overwhelming passion (fear, guilt, or grief).
- *Lack of approval*: Many ethicists also use the term “deficient consent.” A common example is when there is insufficient time for reflection before acting. If circumstances force a snap judgment, so that there is not enough time to think through ethical consequences, there is no ability to approve or disapprove of them.

1.8 VIRTUE ETHICS IN A BROADER CONTEXT

Many models for ethical action are based on the workings of the mind and will, largely ignoring the emotions. These “rationalist” models take varied forms. Some focus on adults that are fully developed as moral creatures. These models are called “static,” and are often used by philosophers, and include deontology, utilitarianism, rights-based theories, and casuistry. Other models speak directly to questions of development. Most focus on moral development in children, but some also address the changes that take place throughout adult life. Many of these models treat areas of human psychic growth that include more than just the ethical, although the ethical is certainly included. For example, Eric Erickson lays out eight “psycho-social” stages (Erikson, 1963; Helminiak, 1987). Each stage involves the resolution of a type of psychological tension, like trust versus mistrust, intimacy versus isolation, and social responsibility versus stagnation. Among all these models, Lawrence Kohlberg’s (Kohlberg, 1968, 1969, 1977) concerns itself most directly with ethical growth. Kohlberg’s original theory includes six stages, ending at the point where a person acts according to universal rational principles.

Rationalist approaches have significant benefits for day-to-day ethical decision-making and for larger more complicated questions. These benefits include: comprehensiveness and completeness, as well as ease of use in discussion, debate and legislation. The specific reasons why people disagree become readily apparent, which is very useful in a pluralistic society where disagreements about ethics abound. These disagreements

often require compromises, which can be made more easily when everyone understands exactly where the compromises must lie.

As significant as these benefits are, a purely rationalist approach also has several drawbacks. For example, ethicists going back at least to the Middle Ages have pointed out that rational analysis has limitations when dealing with truly complex cases. Thomas Aquinas (*c.* 1225–1274), the leading philosopher of the Middle Ages in the West, asserted that people have a “natural judgment” concerning certain ethical goals such as life, truth, and fairness. Aquinas’s “natural judgment” refers to an ability to distinguish good from bad by means other than pure reason – that is, by intuition (Aquinas, 1981). Problems with concretely describing many of the abstract, ambiguous features of complicated situations plague all rationalist approaches to ethics. Many rationalist theories come across as dry, abstract, wrongly framed. For example, Carol Gilligan has roundly criticized Lawrence Kohlberg’s theory on these grounds (Gilligan, 1982), arguing that women often “underperform” men in sociological studies of ethics because the tests are written only in terms of abstract duties and obligations.

In addition, rationalist approaches usually assume that people will naturally do the ethical thing if they know what it is. Unfortunately, this idea does not accord with much human experience. Rationalist approaches typically struggle to answer the question of why it is important to act ethically. For example, Kohlberg’s original theory ends when an individual thinks in terms of universal rational principles, but does not explain why life be ordered according to such principles. In a later attempt to resolve this problem, Kohlberg added an extra “Stage 7” that is explicitly spiritual (Kohlberg and Power, 1981). Rationalist theories provide little defense against rationalization – wherein irrational jealousy, envy, bias, and malice creep in unnoticed to skew moral analysis. Food scientists, who normally work in an environment that prizes rational thought, can certainly be vulnerable to this kind of thinking.

The disadvantages to rationalist ethics have inspired several attempts to fill in the gaps. Although this chapter focuses specifically on ethics in food science, we note in passing that some writers have attempted to set the whole endeavor of science and engineering in a more complete (and less rationalistic) context. Some of these writers are scientists themselves. For examples of this extensive literature, see Polanyi (1974), Jaki (1993), and Smith (1984). The psychologists James Rest and coworkers (1986) have created a “four-component model” for moral decision-making that is easy to understand. The model proposes four steps to ethical decision-making: sensing the presence of ethical issues, reasoning through them, making a decision, and following through on the decision. Thus, the four-component model shares important affinities with classical virtue theory. Prudence underlies sensitivity and reasoning, justice underlies judging, and temperance/fortitude underlies doing. Rest’s model also allows for “affect” (in our terminology, emotions) to influence decision-making in addition to the mind.

Virtue ethics in public discourse has been resurgent after lying dormant for several decades (Wallace, 1978; McIntyre, 1980; Meilaender, 1984; Hittinger, 1987; Cessario, 1991). As indicated earlier, virtue ethics employs the idea of habit to place specific acts within the context of a broader orientation of life. Present-day virtue theorists propose that this approach represents an advance because the goal of the ethical life focuses on development of habits that form “character.” This character offers the power to do what is good more easily.

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