

Chrtc 390 Module 4 Class Notes by Paul Flaman:

Animal Status and Artificial Intelligence

Discussion Questions:

1. Historically how have we viewed animals in the light of questions of personhood?
2. What defines a person? Is it having an immaterial soul? Is it certain properties, like consciousness, self-awareness, “mind,” capacity to be a moral agent, capacity to have a relationship with God?
3. Do other animal species have "minds", “consciousness” and/or “self-awareness”? Do animals experience qualia (subjective experiences)? Are qualia immaterial? Is the difference between us and animals quantitative (a difference only in *amount*) or qualitative (a difference in *kind*)? Are there significant differences among non-human animals themselves that are relevant and if so what are they? Should we regard any other animals as persons? Why or why not?
4. How should we treat other animals? Is it acceptable to use some or all of them for food, clothing, tools, research (e.g. medical, scientific, cosmetic), trophy hunting, entertainment, and/or pets? Do animals have rights—all, some or none? Does a being need to be a moral agent or have responsibilities to have rights? Does our treatment of animals reflect our character as persons, for example, to treat an animal with kindness or cruelty?
5. Could an artificial system (e.g., a computer, a robot) have a mind and/or personhood?
6. What about human-machine and human-animal hybrids (e.g., fusing chimp / human embryos)? Would such hybrids be persons?
7. What role does context (relationships, community, culture, environment) have on personhood?

8. Do animals go to heaven? Have souls?

Kana is a 15-year old female chimpanzee born in a primate colony that researchers use for observation and study. She communicates with the human researchers using several hundred basic hand signs and a symbol board. She lives in community with other chimpanzees in the colony, taking her place in the social hierarchy, interacting with family and cooperating with others. She has given birth twice, and her second infant has recently been weaned. A neuroscientist who is studying the possibility of using stem cells, obtained from umbilical cord blood, in the treatment of dementias such as Alzheimer's is taking the next step toward human trials: testing in our closest relatives. He proposes to destroy parts of the brains of at least two chimpanzees, including Kana's, in a manner that will mimic the brain degeneration seen in dementia, extract cord blood from a newborn chimpanzee, isolate the stem cells, and implant those cells in damaged areas of the brains of one of the chimpanzees to evaluate the degree to which she experiences recovery. The potential of this research is tremendous: Early studies on rats and mice suggest that stem cells can, in some brains, under some conditions, develop into normally-functioning neurons and produce significant behavioral recovery. There is, however, no guarantee that the procedure will be successful, and in any case the "control" chimp, the one who does not receive the stem cells, will experience permanent mental disability. If that chimp happens to be Kana, she will no longer be able to care for her second infant nor be likely to maintain her place in the colony. Can we justify conducting this procedure on Kana and the other chimpanzee on the ground that they are not persons, but the human beings likely to benefit from this research are? Or would it be ethical to conduct such research only on chimps who naturally suffer from dementia? If the latter, why that instead of the former? (This hypothetical case was provided by Dr. Heather Looy and slightly modified by me.)

Introduction

We can consider the question of the status of non-human animals and machines from several perspectives: in the light of human experience, empirical science, philosophy (reason reflecting on experience and science), and beliefs including Christian faith. Science can identify and describe a number of traits and capacities in animal species and machines. These include such things as the size and makeup of animal brains as compared to human brains, and the various behaviors, skills and communication abilities of various animals, as well as the capacities of machines such as to play chess, perform quick calculations, engage in conversations with humans, and learn. The relevance of various capacities for personhood is a philosophical / theological question and not something that empirical science per se can answer. Christian theology attempts to develop

an integrated view in the light of all sources of knowledge including God's revelation, human experience, science, reason and philosophy. Do the modern findings of science including

neuroscience in this area pose real challenges to some related traditional and contemporary philosophical and religious views including Christianity? What are the contributions of philosophy and theology to science? In the light of all the relevant data, what model with regard to science and religion is most appropriate?

Why is defining the status of animals important? As we touched on in Chapter 2 above, whether or not a being is considered a person has been and continues to be very relevant both in law and morality. A “person” has certain rights, for example, the right to life, and legal protections that a non-personal being does not have. A “person” is deemed to have much more moral worth and value than a non-person. If animals, or at least some of them, come to be widely deemed as persons by us, then we would expect them to be treated legally and morally much as we do human persons. Even if we do not deem any animals to be persons, however, this does not necessarily prevent us from assigning them some worth or some legal protections such as not to be treated cruelly.

This chapter will first present an historical overview of some ancient to contemporary beliefs, religious views and philosophies with regard to the status of animals. Among other things, some recent legal stances with regard to animals and a number of views on machines / artificial intelligence will also be considered. Some of the findings of modern science, especially with regard to animals, with an eye to questions of their status and possible personhood, will also be presented, as well as some of my conclusions.

An Historical Overview

Here only a brief overview of a variety of significant views with regard to the status of animals will be presented.

Religions and Beliefs

With the religions of indigenous peoples, for example those of Africa, Australia and the Americas, certain beliefs have been handed down over many generations, perhaps even thousands of years. These include beliefs not only about gods or God (e.g., the Great Spirit) but also about spirits including spirits of deceased ancestors and animals. Some also believed in the spirits of plants, of the sun, and so forth. Continuing to this day many indigenous peoples consider not only human life, but all life including animal and plant life to be sacred (see: Indigenous Peoples; “African Religions,” “Australian Indigenous Religions,” North American Native Religions” and “South American Native Religions,” ER, vols. 1, 2, 10 and 13 respectively).

In a number of Eastern religions including Hinduism and Buddhism, which originated in India roughly between the 20th and 6th centuries B.C., we find belief in reincarnation, the transmigration or rebirth of the soul or self after death including from humans to animals and from animals to humans until purified and liberated. One Eastern religion, Jainism believes every living thing has a soul. Even insects are considered persons. They are strict vegetarians, advocate non-violence towards all animals and try to avoid accidentally killing even insects.(see: “Reincarnation,” ER, vol. 11; and B. Griffiths, NCE, vol. 7, pp. 696-8)

The Bible

The Jewish-Christian Bible or scriptures were written from about 1200 B.C. to 100 A.D. The peoples of biblical times generally lived in closer contact with animals than many people do today. Animals are often mentioned in the Bible. Biblical authors often use animals in a symbolic or metaphorical way to illustrate certain themes, for example: the cunning serpent of Gen 3 tempts the first human beings; God is compared to a lion defending Israel from its

enemies (Is 31:4); Jesus is the sacrificial Lamb of God who takes away the sins of the world (John 1:29); King Herod is described as a fox (Luke 13:32); and the Holy Spirit is symbolized by a dove (John 1:32). This section will not focus on such texts but rather consider some of the biblical data that is relevant to the question of the status of animals.

While some ancient religions such as that of the Egyptians worshipped animals, biblical authors warned against such divinization of animals (see, e.g., Rom 1:18-23). Animals are creatures of God, part of God's good creation. Human beings who have the power to "name" animals are superior to them. Only human beings are created in the "image and likeness of God" and given "dominion" over nature including the animals. Humans as ambassadors of God are to exercise a wise and loving stewardship over creation to meet their own needs, including for food and clothing, and to give glory to God.(see Gen 1-2 and 9:2) While the Jewish Torah (Law) includes legislation related to the religious sacrifice of certain animals (see, e.g., Lev. 1-9 and 16) and dangerous animals were to be restrained or killed (see Ex 21), considerable humanitarian concern for animals is also shown. For example, an ox treading out the grain was not to be muzzled (Dt 25:4) and the Sabbath rest extended to the ox and ass (see, e.g., Ex 20:10; and Brown, vol. 1, 115). Proverbs 12:10 points out that, "The upright has compassion on his animals, but the heart of the wicked is ruthless."(NJB; see DBT, 18-19)

Although some Christians today are vegetarians for various reasons, Jesus is reported in the New Testament as eating fish (e.g., Jn 21:1-14). Eating lamb was part of the Jewish Passover meal which Jesus celebrated as a faithful Jew (Mt 26:17-19). He would not, however, have eaten pork, according to the Jewish dietary regulations of his day (see Combe). In Mt 6:26, Jesus is reported teaching about God's loving providence, saying in part that God takes care of and feeds even the birds. He emphasizes God's loving care for human beings who are of "more value"

than birds. And in Mt 12:12 Jesus says, “How much more valuable is a human being than a sheep!”(NRSV) Jesus’ example and teaching in this area, as in other areas, would be seen as normative by traditional Christians who believe that Jesus Christ was and remains God incarnate, truly God and truly human.

During New Testament times the early Christian Church modified certain Jewish practices with regard to animals. Acts 10:10-16 reports that the Apostle Peter had a vision in which he sees all kinds of animals including those deemed “unclean” to eat by Jewish dietary regulations. Peter is told to “kill and eat” and “What God has made clean, you must not call profane.”(NRSV) This passage supports human beings using all kinds of animals for food. The author of the Letter to the Hebrews understands Jesus Christ’s voluntary sacrificial offering of himself as effective for human salvation from sin. Although the ritual animal sacrifices prescribed by the Jewish law prefigured Christ’s sacrifice, they are ineffective in taking away human sin (Heb. 10; see NJB and Léon-Dufour, 20).

The Bible mainly focuses on the relationships of human beings with God and each other, and on God’s offering human beings salvation from sin. This includes eternal life, resurrection of the body and a new transformed heaven and earth. Does this include animals? Do animals go to heaven? Dr. Peter Hammond notes that this is a controversial question. He himself points to a number of biblical texts which he thinks indicate that “Heaven will be richer in vegetation and animal life than the most paradise-like part of earth could ever be.” For example, Is 11:6-9 speaks of animals including predatory ones and humans peacefully living together in a restored paradise; Eph 1:10 says that God will bring all creation together under Christ; and Rev 5:13 speaks of every creature giving praise to Christ. Are such passages to be interpreted literally or is their meaning more symbolic according to the literary form used?

In any case, a number of Catholic biblical scholars also speak of the cosmic significance of Christ's redemption. For example, with regard to Rom 8:18-25, including the Apostle Paul saying that "creation itself will be set free from its bondage to decay and will obtain the freedom of the glory of the children of God" (v. 21 NRSV), Joseph Fitzmyer speaks of the Apostle Paul affirming "a solidarity of the human and the subhuman world in the redemption of Christ.... Material creation is thus not to be a mere spectator of humanity's triumphant glory and freedom, but is to share in it."(NJBC, 51:86-88) The New Testament speaks not only of the resurrection, the transformation of our perishable bodies into imperishable spiritual bodies, but also of a new or transformed heaven and earth (see, e.g., 1 Cor 15; 2 Pet 3:13; and Rev 21:1-5). With regard to our bodily resurrection, Paul Lamarche says that "what there is of the animal" in us will be "entirely overcome and transformed (1 Co 15,44ff)."(DBT, 19) While the New Testament presents the future state of righteous human beings as truly wonderful and complete, better than we can think and imagine, it presents very little detail with regard to our future resurrected state or the new heaven and earth. Although New Testament authors clearly believed in the immortality of individual human persons (see Ch. 6 below), they say nothing specific as to whether or not any individual non-human animal is immortal.

Philosophy and Theology to the Early 20th Century

The ancient Greek philosopher Plato (426-347 B.C.) argued that the human soul does not have parts like material bodies and thus is immaterial and immortal; it does not disintegrate with bodily death. He thought that not only the mind but also sense abilities require an immaterial soul. In his view souls pre-existed bodies and are reincarnated after death. An imperfect human soul could also be reincarnated in an animal, that is, animals also have immaterial souls (Plato; see P. J. Aspell, NCE, Vol. 11, 407-11).

Aristotle (384-322 B.C.), a student of Plato and another influential ancient Greek philosopher, observed that animals are motivated by goods they perceive through their senses. Humans are as well, but they are also motivated by goods such as truth and justice which they perceive not with their senses but with their intellect (reason). He distinguished various souls (principles of life), vegetative (plant), animal (sensitive) and human (rational) to explain the respective capacities of plant, animal and human forms of life. According to him, although human understanding is not dependent on the body, in thinking we draw upon phantasms (images and other impressions from the senses) which are stored in the body.(Aristotle; see J. Owens, NCE, vol. 1, 679-85)

Many early Christian writers, commonly referred to as the Fathers of the Church, integrated some of Plato's ideas in their writings. This is understandable since they also held that humans have immaterial and immortal souls. They, however, did not accept reincarnation and the vast majority of them did not think that the human soul pre-existed the existence of the body. According to their understanding of the Bible, the human soul survives bodily death in an intermediate state until it is reunited with its transformed body in the general resurrection. As far as I know, they did not speak of individual animals as being immortal.(see: FEF)

Saint Francis of Assisi (1181 or 1182-1226) is well known for his appreciation of God's creation including animals. He saw himself as humbly part of the ecosystem and not as its proud master. He referred to creatures including the sun and moon as "brothers" and "sisters". Francis "saw himself as a simple servant and caretaker of creation". In 1979 Pope John Paul II proclaimed him to be the patron of ecology pointing to him as "an example of genuine and deep respect for the integrity of creation...."(Wintz)

Thomas Aquinas (1225-1274), a great medieval philosopher and theologian, has had a lasting influence on Catholic thought and teaching as well as on many others. Adapting both some Platonic and Aristotelian ideas regarding the soul, he argued that the human soul subsists, that it is rational, incorporeal and immortal, in part because we can understand some eternal truths. In his view animal souls, however, do not subsist—he did not see any reason for them to be immortal. While he speaks of human beings created in the image of God (see under the Bible above in this chapter), he also speaks of “traces” of God in other material non-personal beings including animals. Aquinas’ conclusions are in line with the general teaching of orthodox Christian writers before him (Aquinas, SCG, II, 46-89, and ST, Ia, 75-89; see: W.A. Wallace et al., NCE, vol. 14, 13-28).

St. Martin de Porres (1579-1639), besides his compassion and care for human beings opened a hospital for sick animals and a shelter for stray pets. He is the unofficial saint of veterinarians. He regarded animals as his brothers and sisters and was a vegetarian. It is reported that he was able to communicate with animals, in one instance saving some mice from being poisoned by persuading them to move out of the prior’s linen wardrobe to where they would cause no harm (Rainbolt 2013).

René Descartes (1596-1650), a French philosopher, held that we humans have immaterial souls which interact with our bodies which are basically machines. He considered animals to be merely complex machines without souls and incapable of thought and feeling. Voltaire (1691-1778), however, responded to Descartes asking, “Has nature arranged all the means of feeling in this animal, so that it may not feel?” Jeremy Bentham (1748-1832) argued that even though animals have no language, they should be considered objects of legitimate moral consideration since they are capable of suffering (McKeen).

According to Immanuel Kant (1724-1804), a German philosopher, the human personal subject is to be treated as an end and never as a mere means. Even though animals are not persons, it is bad for us to be unkind to them. This degrades our moral character and makes us more likely to be unkind to humans.(Kant; J. B. Lotz, NCE, vol. 8, 119-24)

Alfred North Whitehead (1861-1947), a British philosopher, attributed “*experience* in progressively more attenuated forms to persons, animals, lower organisms, and cells (and even, in principle, to atoms, though at that level it is effectively negligible), but not to stones or plants or other unintegrated aggregates.”(Ian Barbour in Russell et al., 1999, 276) Influenced by science and evolutionary views, Whitehead considered all of reality including God to be interconnected and in a state of process or becoming (compare process philosophy and theology). He considered God to be a finite actual reality within the world of actual finite realities (compare panentheism).(Whitehead; and W.E. Stokes, NCE, vol. 14, 704-6)

Some More Recent Legal, Philosophical and Theological Views

Animal “Rights” and Welfare

Although the animal rights movement emerged in the late 20th Century, there were earlier precursors. For example, the Royal Society for the Prevention of Cruelty to Animals was founded in 1824. In 1933 the Nazis under Adolf Hitler in Germany enacted the first comprehensive set of animal protection laws. Unfortunately, this regime also became known for its inhumane treatment of many human beings. Peter Singer’s *Animal Liberation* (1975) is often referred to as the “bible” of the modern animal rights movement. He and some others have argued against speciesism, unfair discrimination based merely on membership in a particular species (compare racism and sexism). Singer criticizes the view that humans have a special sanctity of life. Taking a utilitarian approach he “holds that the capacity of sentient animals to

experience suffering and enjoyment entitles them to equal consideration of their interests.”(W.A. Barbieri, NCE, vol. 1, 456; see: Howard)

Some argue that at least certain animals should be granted legal rights. For example, Tom Regan argues that although non-human animals are not “moral agents,” some animals including all normal mammals of at least one year of age are “moral patients,” “subjects-of-a-life.” They have inherent value and ought never to be treated as a mere means to an end. Steven Wise, an American legal scholar, argues that chimpanzees, gorillas, orangutans, bonobos, Atlantic bottlenose dolphins, African grey parrots, African elephants, dogs and honeybees should be granted legal rights because they experience emotions, consciousness, and some sense of self-awareness, and have the ability to act intentionally.(see: WFE, 4 Nov. 2008; and Washington Post)

Mary Ann Warren, a contemporary philosopher, lists several criteria for personhood: consciousness, thought, capacity to reason, intentional action, social and communicative abilities, self-awareness, and moral agency. In the light of these she considers a number of the more “intelligent” non-human animals (e.g., the great apes, dolphins and elephants) to probably be persons and that we should give them the benefit of the doubt.(Ch. 17)

On the other hand, some argue against granting any non-human animals legal rights. For example, Judge Richard Posner says that it “is not feasible to equate animals to humans. There are too many differences. Their needs and our relations to them are too different from the needs and our relations to human groups to warrant actually granting animals rights.”(Zenit, 29 Jun. 2002) Philosopher David Oderberg argues that humans as rational animals have rights not in virtue of their being animals but in virtue of their being rational. Even though some animals may be subjects in a psychological sense they are not subjects in a moral sense with rights and duties.

He argues that non-human animals do not have rights because “No animal *knows* why it lives the way it does; no animal is *free* to live in one way or another That is why, for instance, even the most hard-line animal rightist does not advocate prison (or worse) for chimpanzees that go on random killing sprees, as they are known to do.” Although human babies, the senile, the sleeping, and so forth, may act more by instinct than knowledge and free choice, they are still “*qualitatively* different from other animals because of the *kind* of creatures they are [A]ll such people are instances of a distinctive kind of animal—free to choose and aware of why it does so.” While animals do not have rights as human persons do, we should be concerned for their welfare and not be cruel to them since we have a responsibility to be virtuous and care for the natural world “in a way consistent with our own flourishing as a species.”(42-3)

The whole discussion of animal rights or welfare in recent decades has had some influence on statements concerning using animals in medical research. For example, the World Medical Association Declaration of Helsinki (2013) says in part that: “Medical research involving human subjects must ... be based on ... adequate laboratory and, as appropriate, animal experimentation. The welfare of animals used for research must be respected.”(WMA, n. 21) While agreeing with these principles, bioethicists David Roy et al. think that “differences between species do have moral significance. Ethical constraints on what we may impose on other animals, to satisfy our own good and our own needs increase as the capacities and needs of the animals approach those of human beings.” They do not accept the view that “humans have no right to treat animals any differently than they would treat any member of their own species.”(333)

The discussion of animal rights and welfare has also influenced several countries to enact new legislation with regard to animals. For example, the Canadian House of Commons in June

2002 approved a new animal cruelty bill. Canadian law before treated animals as chattel, inanimate objects without rights; now animals have legal status as sentient beings with their own interests and values, and are considered worthy of legal protection.(McKeen) In the same year the words “and animals” were added to an article in the German Constitution which now reads, “The state takes responsibility for protecting the natural foundations of life and animals in the interest of future generations.”(Zenit, 29 Jun. 2002) The Netherlands, United Kingdom, New Zealand, Switzerland, Germany and Austria currently have either bans or severe restrictions on research involving non-human great apes—chimpanzees, bonobos, gorillas and orangutans.(“Great Ape Research Ban,” WFE, 5 Nov. 2008)

A Few Other Significant Views

Phenomenology is a type of philosophy which became quite widely used in the 20th Century. Phenomenologists focus on trying to accurately describe all the data (phenomena) of experience (that is, not only what can be empirically verified in a laboratory) including our experience of ourselves as persons, interpersonal relationships, values, religion and God, and on reflecting critically on our experience. Much in this area has been written about the experience of each of us being a person, a personal subject with consciousness, free will and moral agency. One Christian phenomenologist, Dietrich von Hildebrand, concludes that although we can experience animals as having inherent value, we can experience human beings as being more valuable. He thinks it is moral to use animals to meet our needs but he considers it intrinsically wrong to sadistically torture an animal (see, e.g., his *Christian Ethics*).

Karol Wojtyla (who became Pope John Paul II in 1978) was another leading phenomenologist. Writing in 1960 he describes animals as “individuals” of a species. While some animals in particular are relatively close to humans with regard to the bodily aspect, only

humans are persons. Humans have a rational nature and inner spiritual life with free will. They are concerned with truth and goodness and capable of communicating not only with the visible world but also with “the invisible world, and most importantly, with God.”(1981, 23) In line with the biblical commandments of love, he promotes a Christian personalism which affirms the primary value of the person over things and secondary values of the person such as attributes of the person and pleasure.(cf. *ibid.*, 22-44)

Benedict Ashley is an Aristotelian-Thomist who incorporates some insights from process philosophy. He is aware of a lot of the scientific data, also with regard to brains. He distinguishes sensation and perception, which animals also have, from human self-consciousness and knowledge which transcend the body.(1985, 419-20) Alasdair MacIntyre, another Aristotelian-Thomist, discusses dolphins pursuing dolphin goods, having pre-linguistic, pre-reflective reasoning abilities. He compares this to humans in the early infant stage before language and reflective abilities are operative.(1999)

Ian Barbour, influenced by evolutionary thought and process philosophy, supports emergent monism. This view understands reality as “a hierarchy of many levels” rather than “dualistically” (in Russell et al. 1999, 278). With regard to animals he speaks of the evolution of consciousness. “Simple organisms have a minimal *sensitivity* and responsiveness to the environment At somewhat higher levels *sentience* includes a capacity for pain and pleasure, which were presumably selected in evolutionary history for their contribution to survival.” With regard to “the versatile and goal-directed behaviour” of more complex animals which some take as “evidence of thought, feeling, and conscious awareness,” Barbour notes that although the learning abilities of some animals such as great apes are “impressive,” they fall “far short of

human capacities for language and abstract thought. Such evidence would lead us to speak of *degrees of consciousness* rather than an all-or-nothing attribute.”(ibid., 259-260)

For a couple of other fairly recent perspective see, for example, Nancy Howell and J. Wentzel Van Huyssteen. On the one hand, Howell focuses on our similarities with chimpanzees such as our genetic closeness (98.4% DNA similarity), and chimpanzees’ abilities to use some tools, to teach these skills to their young, and to learn and communicate with us using American Sign Language. She supports expanding personhood to include chimpanzees based on their “sense of self-identity,” “awareness of their place in the social order,” and their “long-term memories of relationships.”(187) On the other hand, Van Huyssteen argues that we humans are unique and qualitatively different than other animals. We are not only “*more* intelligent than other species are, but we are also *differently* intelligent: intelligent in a manner that allows us not only to be self-aware, but also to manipulate the environment around us, in a qualitatively unique way.” There is a vast cultural difference between us and other species as well as our “amazing ability for introspection and self-awareness ... inner experience”. The human mind is able “to create art, do science, and creatively symbolize religion and religious faith, when not a trace of any of these are found even in the chimpanzee, our closest living relative”.(173-4)

Some Related Catholic Teaching

The Second Vatican Council in its Pastoral Constitution on the Church in the Modern World *Gaudium et Spes* (1965) taught that “man is the only creature on earth that God has wanted for its own sake...” Related to the special dignity of human persons it also says that “The dignity of man rests above all on the fact that he is called to communion with God” and “In reality it is only in the mystery of the word made flesh that the mystery of man truly becomes clear.”(Vatican II, GS, nn. 24, 19 and 22, respectively)

In his Apostolic Letter *Salvifici Dolores* “On the Christian Meaning of Human Suffering” (1984), Pope John Paul II says, “It is obvious that pain, especially physical pain, is widespread in the animal world. But only the suffering human being knows that he is suffering and wonders why...”(n. 9) Related to the human person being a composite of physical body and spiritual soul, human beings experience not only physical pain but also moral suffering (e.g., remorse of conscience, fear of death, experiencing persecution or mockery). Psychological pain (e.g., sadness, depression) can accompany both physical pain and moral suffering.(nn. 5-6)

In his Encyclical Letter *Evangelium Vitae* The Gospel of Life (1995), Pope John Paul II says,

...when the sense of God is lost, the sense of man is also threatened and poisoned... Man is no longer able to see himself as ‘mysteriously different’ from other earthly creatures; he regards himself merely as one more living being, as an organism which, at most, has reached a very high stage of perfection. Enclosed in the narrow horizon of his physical nature, he is somehow reduced to being ‘a thing’, and no longer grasps the ‘transcendent’ character of his ‘existence as man’. He no longer considers life as a splendid gift of God, something ‘sacred’ entrusted to his responsibility and thus also to his loving care and ‘veneration’. Life itself becomes a mere ‘thing’, which man claims as his exclusive property, completely subject to his control and manipulation.(n. 22)

The *Catechism of the Catholic Church* (1997) is a summary of Christian faith and life which refers to many other sources. With regard to “Respect for the integrity of creation” it says:

2415 The seventh commandment [i.e., of the Ten Commandments] enjoins respect for the integrity of creation. Animals, like plants and inanimate beings, are by nature destined for the common good of past, present, and future humanity. Use of the mineral, vegetable, and animal resources of the universe cannot be divorced from respect for moral imperatives. Man's dominion over inanimate and other living beings granted by the Creator is not absolute; it is limited by concern for the quality of life of his neighbor, including generations to come; it requires a religious respect for the integrity of creation.

2416 *Animals* are God's creatures. He surrounds them with his providential care. By their mere existence they bless him and give him glory. Thus men owe them

kindness. We should recall the gentleness with which saints like St. Francis of Assisi or St. Philip Neri treated animals.

2417 God entrusted animals to the stewardship of those whom he created in his own image. Hence it is legitimate to use animals for food and clothing. They may be domesticated to help man in his work and leisure. Medical and scientific experimentation on animals is a morally acceptable practice if it remains within reasonable limits and contributes to caring for or saving human lives.

2418 It is contrary to human dignity to cause animals to suffer or die needlessly. It is likewise unworthy to spend money on them that should as a priority go to the relief of human misery. One can love animals; one should not direct to them the affection due only to persons.(CCC)

With regard to research on animals the Catholic Health Alliance of Canada (2012) says, “Animals should be used in research only if necessary. Such research should show proper respect for the animals used ... When research on animals is justified, pain and distress must be minimized and proper pain relief provided.”(p. 89)

Modern Science

Do the findings of modern science with regard to animals exclude some of the above philosophical, theological and legal positions and perhaps support some other views? Can science arbitrate or settle such questions? As we considered in Chapter 1 above, empirical science including neuroscience plays an important role in our society but it also has its limits. Related to the focus of this chapter, empirical science can help us to identify and describe more accurately traits and capacities in various animal species and machines. The relevance of these capacities for personhood, however, is a philosophical / theological question. Are humans only quantitatively different from animals or also qualitatively? Related to this question, in this section we will briefly compare first animal and human brains, and then some animal and human capacities such as sentience, emotions, learning, communication, cognition, awareness and self-awareness. Empirical science can help us to assess at least some of these capacities. We will

explore the implications of these with regard to our understanding the status of non-human animals.

Animal and Human Brain Comparisons

In the living world nervous systems are found only in animals. Neurons associated with muscles enable movement. There are about one million animal species. Nervous systems among animals vary greatly. Among animals with brains, the size of brains also varies significantly. While larger brains are in general associated with more complex behaviors in animals, more significant seems to be the ratio of brain size to body size. For example, whales have larger brains than humans but the ratio of their brain size to body size is much smaller than in humans who exhibit greater intelligence and more complex behaviors.(see: Kolb and Wishaw, 51-67) The following figures also illustrate some other significant brain differences among animals including ourselves.

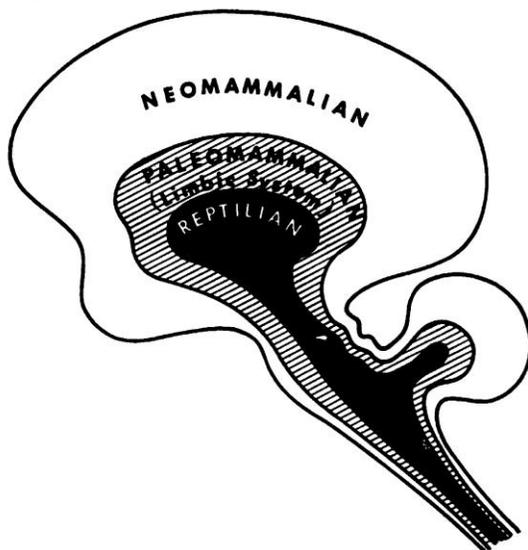
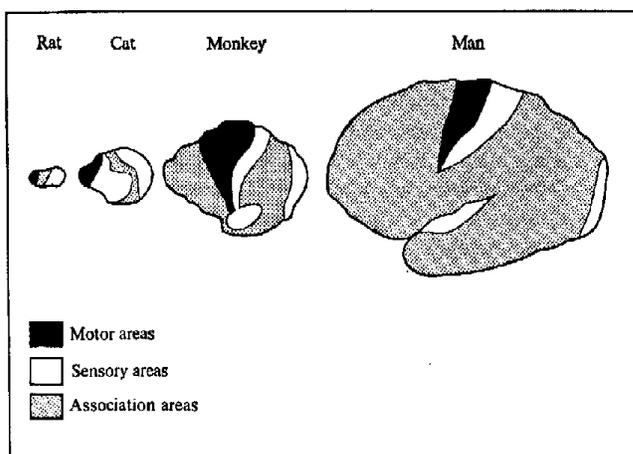


Figure 3.1— Three basic brain patterns. In evolution, the primate forebrain expands in hierarchic fashion along the lines of three basic patterns that may be characterized as reptilian, paleomammalian, and neomammalian. From Paul D. MacLean, "The Brain in Relation to Emotion and Medical Education," *Journal of Nervous and Mental Diseases* 144:374-82, 1967. Reprinted by permission of the author.

From: Paul MacLean's *Triune Brain*

Maclean's figure outlines three basic brain patterns rather than the full complexity of brains. From an evolutionary perspective the primate forebrain expands in hierarchical fashion along three basic patterns that can be characterized as reptilian, paleomammalian (old mammal / limbic system), and neomammalian (neocortex). This illustrates some similarities and differences between reptiles and mammals. Our human brain stem roughly corresponds to a reptile's brain and also serves survival purposes related to self-preservation and mating behaviors. The paleomammalian part of the brain is present in all mammals. Compare the human limbic system which is involved with such things as emotions and some aspects of memory. The neocortex appears primarily in primates and is most developed in humans. This part of the brain is related to the human abilities of intellectual understanding, creating and using complex language, empathy, planning, reason, judgment, and impulse control. With regard to these brain patterns, for example, should we have more limits on research on animals whose brains more resemble ours?

The Conscious Brain



31 The emergence of the association cortex. Approximate scale drawings of the cerebral hemispheres of four mammals. Note both the absolute and relative increase in size of the area of association cortex

From: Steven Rose

Rose's figure also shows some animal and human brain comparisons. Note how much larger the association areas (also called uncommitted cortex, that is, not committed to sensory and motor functions and thus free for learning associations) of the brain in humans are compared to a few other mammals (cf. Hofman, 2014). The human brain is also more asymmetrical than any other mammal brain with the left and right hemispheres specializing more with regard to different functions. The human's prefrontal cortex (associated with empathy, planning, judgment, impulse control) and temporal lobes (associated with language) are also relatively larger.

Some Animal and Human Capacities

In this section some animal capacities that many consider relevant to how we treat them will be considered briefly. As noted above, a few have also argued that at least some non-human animals should be considered persons based on their capacities. The capacities that will be considered here include sentience, emotions, learning, cognition and problem-solving including the use of some tools, communication / language, culture and tradition, awareness / consciousness, social awareness, self-awareness / self-consciousness, and mind / theory of mind. Related to these some animal examples will be given. At times these animal capacities will be compared with related human capacities. Some discussion of the difficulties of studying subjective states including consciousness in others and in particular other species than our own will also be included.

Sentience means the ability to feel pain and/or pleasure. An organism's responding to stimuli does not necessarily mean that it "feels" anything. For example, "endogenous opiates, which are found in vertebrate brains" and for at least humans "serve as a natural analgesic" (painkiller), are also found in earthworms. Does this mean that earthworms feel pain? They "do

not have brains, nor ... anything resembling a central nervous system. All they have is ganglia.... primitive chains of neurons.” Opiates such as heroin and morphine “come from poppy seeds. But simply because poppies are a source of opiate it would be difficult to argue that among plants they are unique in their experience of pain.”(Gallup, 638-39)

Emotions: Consider, for example, attachment, anxiety, depression, play, delight in dogs, and grief and psychological problems in elephants and chimpanzees, and laughter in chimps. To what extent are these similar to comparable emotions in humans?

Recently in some parts of the world some young elephants have exhibited untypical delinquent behaviors such as attacking humans and other animals. Some researchers attribute this to poaching and culling of elephant herds which has led to a collapse of the elephants’ intricate family life and culture. For example, psychologist Gay Bradshaw says, “The loss of elephant elders and the traumatic experience of witnessing the massacres of their family impair normal brain and behavior development in young elephants.”(Siebert) Elephants seem to experience a number of emotions including grief with the death of another elephant. They have excellent memories (compare their brains including hypothalamus and limbic system).

Learning: Consider experience and conditioned associations—pleasant versus painful stimuli. Many animals can be trained to do a number of things using operant conditioning including some mammals (rats, dogs, elephants, chimps...) and birds (parrots, chickens). Do some non-human animals exhibit any other kinds of learning?

Cognition and Problem-Solving Including the Use of Some Tools: Consider, Alex, an African Grey Parrot, who could make some distinctions with regard to size, for example, which object is bigger, seven colors, and quantities up to six. How should we interpret this? While Alex’s trainer interpreted Alex as understanding what he said, some others have criticized this

arguing that Alex's use of language was a result of operant conditioning. Note that Alex received a treat when he gave the right response and a tap on the beak when he gave a wrong response or did not respond as his trainer wanted him to respond. ("Alex – One of the Smartest Parrots Ever," retrieved 25 Sept. 2019 from: https://www.youtube.com/watch?v=7yGOgs_UIEc)

A word of caution is certainly needed. Consider, for example, Clever Hans, a horse, who appeared to be able to do arithmetic. Investigation discovered that he was not really able to do arithmetic but was taking involuntary cues from his human trainer's body language. (see: "Clever Hans," WFE, 7 Nov. 2008). With regard to different kinds of intelligence different dog breeds excel in various skills from tracking to doing tricks to identifying human words with certain objects and actions. Elephants, for example, will use branches to swat flies and have been known to drop large rocks on electric fences to destroy them. In captivity some elephants have escaped using such methods as deception and unscrewing large bolts. ("Elephant Intelligence," WFE, 7 Nov. 2008) Chimpanzees in the wild have also exhibited some simple use of tools such as poking a stick into an ant hill to obtain ants to eat.

Dr. Michael Tomasello, a specialized researcher on primates and human children has found evidence that in competitive settings "chimpanzees know what others can and cannot see, as well as what others have and have not seen in the immediate past" but that "in cooperative-communicative situations chimpanzees display much weaker social-cognitive skills.... One of the unique characteristics of human social cognition may be its use for cooperative-communicative purposes, such as in linguistic communication, social learning, teaching, and collaboration." (30 Apr. 2003) With humans there is a revolution related to "the human capacity for culture." By "around 9 to 12 months of age human infants begin to understand others as

intentional agents like the self, which enables the acquisition of cultural activities and conventions of all kinds.”(1 May 2003)

Communication / Language, Culture and Tradition: There exist different kinds of communication and language in the animal kingdom. Compare communication within species, for example, one beaver slapping its tail on the water to alert other beavers of danger, and between species, for example, some chimpanzees who have been raised closely with humans and who have been taught hundreds of words using American Sign Language. With regard to culture and traditions, chimpanzees practice a limited use of tools in the wild. This is different in different areas of Africa, for example, some use a twig to procure ants to eat from an anthill whereas others use stones to smash coconuts. These respective practices have been passed down many generations. Some see this as a simple form of culture or tradition. What does linguistic communication say about cognitive complexity and awareness? What is language for? Some animal, such as whales and elephants, use different “dialects” in different pods or herds.

Dr. Michael Tomasello reported a dog in Germany having a vocabulary of 200 words but said this was not linguistic but association.(2 May 2003) In one sense dogs are more intelligent than chimpanzees. Dogs will follow cooperative pointing for food whereas chimpanzees will not. Consider the recent evolutionary history of dogs who have been selected for cooperative skills with humans.(30 Apr. 2003) One remarkable dog Chaser, a Border Collie, learned and remembered the names of more than 1,000 objects. Her memory for these was better than her human trainer’s. Once when given a name Chaser had not yet learned, Chaser retrieved an object from a pile of objects whose name she had not been taught.(see related Youtube videos).

With regard to animal and human language, John Eccles, a neuroscientist, and Karl Popper, a philosopher of science, distinguish four types of language: 1) expressive function

(revealing, e.g.: a cornered cat arches its back, its hair raises and it hisses); 2) signal function (e.g., a beaver slaps its tail on the water warning other beavers of danger); 3) descriptive function (most human conversation, e.g., describing the weather, how one feels, etc.; we can consider these descriptions true or false, corresponding to reality or not); and 4) argumentative function (whether an argument, a line of reasoning ... is valid or not). They consider 3 and 4 to be unique to humans. In reviewing the literature on the subject, Eccles notes that Chimpanzees can be taught to use 100's of signs or symbols but they simply use them pragmatically, that is, to get what they want. For example, a chimpanzee can learn to push a yellow triangle on a keyboard to get a banana. Chimpanzees, however, do not use these signs to ask questions with respect to intellectual understanding. On the other hand, by the age of three a typical human child asks many "why" questions indicating his or her intellectual curiosity.(1989, Ch. 4)

Awareness / Consciousness: Consciousness means awareness of things in the world around you, how they affect you. Subjective experiences or qualia presuppose consciousness. Self-consciousness means awareness of one's self, aware of being aware. Consciousness is foundational for: theory of mind, inferring intentional states, desires and perspectives of others; abstract symbol manipulation; and free will, decision making, and moral agency. Several cautions are needed with regard to studying consciousness in animals: consciousness (subjective states) is difficult to study scientifically; other animals cannot tell us about their internal states; we often project, anthropomorphize, "over-interpret" violating the principle of parsimony; are there any tests or predictions about behavior that would definitively demonstrate consciousness? Why did consciousness evolve? What functions, advantages does it have for its possessors?

Neuroscientist John Eccles (compare his dualistic interactionism hypothesis regarding two-way interaction between an immaterial self and a physical brain which is explained more in

Ch. 10 below) concluded that all mammals are conscious since other mammal brains have the same characteristic in the neocortex which would allow quantum mechanics a role regarding the dendron / psychon two-way interactions. He had not studied bird brains enough to draw a conclusion, but concluded that other animals including reptiles were not conscious.(1994, Ch. 10)

Social Awareness, Self-Awareness / Self-Consciousness: Related to social self-awareness, for example, chimpanzees and some other animals are aware of social relationships and remember individuals and social position. Besides humans, among primates only chimpanzees and orangutans can recognize themselves in a mirror. Others respond “as if confronted by another animal” or “lose interest in mirrors.” Gallup thinks that to be able to recognize oneself in a mirror one needs to have some sense of self-identity.(632-3) “The average human child does not show self-recognition until 18 to 24 months of age.”(Gallup, 637) Is recognizing oneself in a mirror a sign of genuine self-awareness? Are perhaps some other animals such as dogs, which can respond to their names or “aware” of their place in a social hierarchy, perhaps also self-aware in some sense even though they do not respond to their image in a mirror?

Mind / Theory of Mind: Are chimpanzees capable of a theory of mind in the sense of having an awareness of what another is seeing, feeling and/or thinking? Practicing deception does not necessarily mean an animal has a “mind” and thinks about how the other will react. Consider how some species of ground nesting mother birds move away from their nest acting as if they are injured to distract a predator from their nest of eggs or young. Gallup interprets this as “simply a hard-wired instance of deception which capitalizes on the fact that some predators are highly attracted to injured prey.”(634) He says that hard-wired instances which may seem to

exhibit a mind are “relatively independent of prior experience” and the response is “stereotyped, while legitimate states of mind ... take into account the unique characteristics of the individual participants, the particular situation at hand, and the relationship of both of these elements to prior experience.”(636) One example he gives of a chimpanzee having a mind is a chimpanzee who “removed a blindfold from her trainer’s face in order to lead him to a box filled with food that the trainer alone could open. Only when the blindfold covered the trainer’s eyes did it elicit this response. When he wore it around his mouth or hair, she made no attempt to remove it.”(Gallup, 637)

Difficulties of Studying Subjective States Including Consciousness in Others:

Perhaps the most significant challenge in studying psychological experience and subjective awareness is the fact that the only inner experience any one of us can ever really know is our own.(Nagel) Knowledge of what it is *like* for another to perceive, feel, intend or consider must always be inferred from behaviour or self-reports. This challenge is intensified when we attempt to study creatures with which we cannot easily communicate. Inferences from behaviour are often controversial and there are usually multiple possible interpretations. For example, when you come home and your dog wags its tail rapidly, is it feeling happy to see you or is this simply a reflex or learned response that has been previously reinforced? When a chimpanzee signs the question “Sad?” to its human trainer, is it demonstrating an ability to empathize and recognize that other beings may have different emotional states, or has it simply learned an association between a particular facial expression or posture and a particular word?

A second difficulty with understanding the subjective experience of other creatures is that they are truly “other”. Their perceptions are based on sensory systems that differ more or less from our own, and they have different challenges, objectives, priorities and motives. While we

can imagine how *we* would feel and respond in similar situations, we cannot be sure that other creatures would feel the same. As Nagel put it, there is something that it is *like* to be a bat, or parrot, or chimpanzee that human beings cannot access.

The non-human species we understand the best have had extensive contact with humans. Indeed, many have interacted with humans for most if not all of their lives, and many are raised in colonies designed and maintained by humans, not in their natural environments. We do not know fully how this contact and interaction alters the behaviour of other species. For example, chimpanzees raised in captivity can be trained to communicate with humans using signs; however, this behaviour is never observed in wild chimpanzees (and indeed, sign-trained chimpanzees almost never use the signs in interaction with each other). Further, some species have interacted with human beings for so long that they may have evolved specific behaviours and perceptions; for example, over generations various breeds of dogs have developed heightened responsiveness to particular human cues (such as requests from humans to fetch or pull objects, to assist with hunting, etc.). Many species are excellent imitators and most species will alter their behaviour in response to specific, systematic reinforcement. However, this does not necessarily mean that these creatures are *aware* of and *understand* the humans they interact with in the way that humans are aware of and understand them and their behaviour.

A related concern is anthropomorphizing. Studies have shown a strong human tendency to project human capacities, such as intention, agency, and awareness, onto other species (e.g., Epley, Waytz & Cacioppo, 2007). We tend to over interpret behaviour, violating the principle of parsimony. Highly complex behaviour can occur as the result of following very simple rules (Sumpter, 2006).

The challenges expand when we attempt to study self-awareness and consciousness. Some scholars (e.g., McGinn) argue that consciousness may be in principle inaccessible to scientific analysis. Others (behaviourists; Libet, 1999; Pockett, 2004; Velmans, 1991) believe that consciousness may be an epiphenomenon of mental processing—a kind of side effect that serves no immediate function for humans or any other species. If the former, we are left helpless to comment on the subjective awareness of other species. If the latter, knowledge of subjective awareness is irrelevant to questions of the status of non-human animals. However, many scientists believe consciousness does indeed have causal efficacy (e.g., Jerry Fodor), and that at least the neural structures and functions involved in consciousness can in principle be understood, and that at the least we can find ways to distinguish between behaviours that reflect consciousness and those that do not. Gallup speaks of the paradox of studying consciousness—one can look at evidence for consciousness as an evolved, adaptive trait, but consciousness is also essentially private and inaccessible to objective analysis.(632) One function of consciousness may be an enhanced ability to deal with novel situations, unpredictability, and rapid change. Responding to familiar situations tends to become automatic, and in fact consciousness can hinder these processes. (Think, for example, of trying to stay conscious of where to move your fingers when typing.) While the physical world is a generally predictable place, the *social* world is not. It may be that consciousness is required for complex social interactions, which are subtle, dynamic, and crucially important for social species. While we should not diminish the difficulty of studying consciousness, there is good reason to believe that it not only serves important functions, but is perhaps the most relevant characteristic to study when asking questions about animal status and personhood.

Some speculate that it may be possible to create future animal-human hybrids, for example, a half chimp / half human. By fusing embryos from two different species scientists have already created a “chimera” that is a half sheep and a half goat. If it was ever possible to create a half chimp / half human and this was accomplished, would such a creature be a “person”? What criteria would we use to decide this? One bioethicist, Andrew Varga, argues that it would not be ethical to attempt to create animal-human hybrids. Such “would not elevate animals but degrade and dehumanize human beings.”(Flaman 2002, 24; see Varga, 115-16 and 123-4; compare Rifkin, 2-3 and 101)

Machines / Computers / Robots / Artificial Intelligence

Consider present capacities and future capacities of computers and robots. For example, computers can play a number of games like checkers, chess and even poker as good, or better, than most human beings. Chinook, a computer checkers program developed at the University of Alberta has actually solved the game of checkers and cannot be beaten. Consider robots such as Cog, Grace, and Assimo. The latter developed by Honda can walk including up and down stairs, run, open a jar, pour juice into a glass, carry out many commands, and interact with humans including engaging in some conversation.(see related videos on YouTube) Although some forms of artificial intelligence can “learn” in a sense (e.g., the best chess programs today learn from their mistakes), there still remains the question of whether or not machines including robots will ever be able to think, experience consciousness and emotions, and be truly creative?

Benedict Ashley, an Aristotelian-Thomist philosopher and theologian considers machines to be aggregates which cannot have awareness and perception unless they become living organisms.(1985, 419-20) With regard to artificial intelligence, Ian Barbour, an emergent monist

theologian, says there are still enormous differences between computers and brains. With regard to possible future developments, he says:

I suspect that it will turn out that conscious awareness requires forms of organized complexity or properties of neural cells and networks that have no parallels in silicon-based systems. I do not think we can exclude the possibility of conscious computers on metaphysical grounds, but there may be empirical grounds for the impossibility of computer consciousness. Because we know so little about the physical basis of human consciousness or the directions of future research in computer science, I am willing to leave this question open.(in Russell et al., 1999, 266; cf. 261-70)

Consider also possible future human or animal / machine hybrids. For example, University of Florida Professor Thomas DeMarse took some living brain cells from a rat, got them to multiply to create a mass of 25,000 neurons and connected these to 60 electrodes and a computer. This animal / machine hybrid learned how to stabilize an aircraft in varying weather conditions on a flight simulator.(Spears) Should we in the future perhaps consider some future highly sophisticated machines / robots / forms of artificial intelligence to be persons or have rights?(University of Alberta Debate) Is science helpful regarding such questions?

Some Conclusions

With regard to the status of animals, it seems to me that there are some differences among animals that are relevant to how we treat them. Although some simpler forms of animal life which do not have brains and central nervous systems may react to certain stimuli, this does not mean that they are sentient and really experience pleasure or pain or any other qualia. On the other hand, it seems reasonable to assume that many animals are sentient and subjectively experience a variety of qualia related to the structures of their bodies including their sense organs, nervous systems and brains. Such animals thus have not only a biological dimension but also a psychological dimension to a lesser or greater extent. While we should never be cruel to

any animal, we should in particular be kind and humane to animals, which it is reasonable to assume, are sentient and have a psychological dimension.

The great ancient Greek philosopher Aristotle defined human beings as rational animals. I think that he was right in concluding that while animals seek sense goods, as do we, none of the non-human animals perceive and seek “rational” goods such as truth, as do we humans. I also agree with the great Twentieth Century philosopher Dietrich von Hildebrand’s conclusion that we human beings can experience certain morally relevant values (or goods) such as truth, justice, the great dignity of persons, the sacredness of life, fidelity and self-giving love that transcend our immediate experiences of these. Such values are akin to Aristotle’s rational goods in that we do not perceive them via our bodily senses but with our intellect. While not every human properly appreciates such values or goods due to a faulty education or other defects such as certain kinds of brain damage, in general we humans can grow in appreciating such values as very real, although intangible and invisible. Much human behavior is motivated by seeking such transcendent personal values. Human morality in large part is related to growing in appreciating, seeking, promoting and respecting these personal values. Since we have no evidence that any of the non-human animals have the intellectual understanding or capacity to perceive and seek such rational goods / personal values, other animals do not have a truly moral dimension as do human beings.

Human beings by nature also have a spiritual dimension which other animals do not have, that is, a natural capacity to pray, to communicate with God who is “Spirit.” Although God is intangible and invisible, that is, God transcends the physical universe, human beings can come to appreciate and understand God as most real, indeed as the source of all other reality including ourselves.(compare Wojtyla above in this chapter; and chapters 8 and 9 below) Even though not

all human beings such as human embryos or the comatose are at present capable of exercising this spiritual capacity, this does not undermine the truth that human nature has this spiritual dimension. Normal human embryos if allowed to develop, or the comatose if their brains heal sufficiently, and so forth, can later exercise this spiritual capacity. Dietrich von Hildebrand concluded that we human beings can experience morally relevant values such as the dignity of persons and the truth (see the preceding paragraph) as rooted in the nature of God and our own nature created in the image of God. I agree with this, that our moral and spiritual dimensions are profoundly interconnected.

There is thus evidence that in general and by nature we human beings have intellectual, moral and spiritual capacities which currently existing non-human animals do not have. These natural human capacities are what make us to be “persons,” which is in line with the classical definition of a person as “an individual substance of a rational nature.”(see Ch. 2 above) I, therefore, conclude that the term “person” should not be extended to other animals.

I am convinced that we human beings as persons with intellectual, moral and spiritual capacities, as created in the image of God and as being conscious collaborators or partners with God, have a greater dignity than the non-human animals living on our planet. We are not to misuse or abuse animals, however. As God’s ambassadors or stewards, we are called to properly care for them. I basically agree with the summary of the *Catechism of the Catholic Church* with regard to animals quoted above including that we can use them to meet human needs while respecting their inherent goodness and integrity as part of God’s good creation.

Do animals go to heaven? While the very goodness and being of animals give praise and glory to God, it seems to me that we have no evidence to suggest that non-human animals have any conscious sense of God, pray and so forth. According to the Bible, the new heavens and

earth will be complete and perfect. Will this include plants and animals? Will any individual animals such as your favorite pet continue to exist beyond death? These are not questions that our empirical sciences can answer. When one takes into account different literary forms within the Bible, it also does not seem to me that God has clearly revealed the answer to such questions in the Bible. If individual animals on earth do not continue to exist actually in heaven they will nevertheless continue to exist in a certain sense in our memories and in the mind of God. As to whether or not individual animals actually exist in heaven I do not think that we know. God is infinitely wise and fair. If we get to heaven we will completely agree with God. Thus we will be completely happy in heaven, whether or not there are plants and animals there.(cf. Got Questions) And, as the New Testament teaches, heaven will be much better than we can now think or imagine (1 Cor 2:9).

With regard to the status of machines I agree with theologian Benedict Ashley (see this chapter above). As long as machines are simply an aggregate of parts and not living organisms, they cannot have qualia—genuine subjective experiences including sentience, emotions, consciousness and real understanding. If we were to create a machine / living organism hybrid, then perhaps such hybrids could experience some qualia. Many humans already have some artificial or mechanical parts which assist them in moving, staying alive, hearing and so forth. So in a sense we already have human / machine hybrids which are sentient, conscious and persons.

With regard to the subject matter of this chapter, as well as in other areas, I understand the genuine findings of empirical science and Christian revelation, good Christian theology and good philosophy to be complementary. Empirical science, for example, can help us to understand more accurately the similarities and differences of human beings and non-human

animals. Such science, however, by itself cannot tell us how we should treat animals and whether or not any are persons. Good philosophy and theology help us to address these.