CHAPTER ONE

Introduction

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Book Overview

This book is about many things. It is about who we are and who we might be, given our current and future interactions with technology. It delves into what a person is as well as what a person might become. It is also about the descriptions we provide for ourselves, what we call our self or identity. These are complex topics and have been addressed from many different disciplinary perspectives. As a result we discuss them from the point of view of philosophy, psychology, neuroscience, artificial intelligence, and robotics.

This introductory chapter is designed as an orientation and springing-off point. We begin by defining essential terms. In particular we look at what it means to be human from philosophical, historical, evolutionary, and social-developmental approaches. We then introduce the concept of the artificial self and differentiate it from other similar concepts.
An artificial self is an agent that acts and experiences the world the same way biological selves do and that from a behavioral point of view cannot be distinguished from a “real” person.

Artificial selves in various incarnations have been a popular topic in mythology, literature, and film. We therefore provide a brief history of their appearance in these media. Following this we describe early attempts to build artificial selves. We finish with the hypothesis that it should be possible for an artificial self either to be constructed or to emerge spontaneously in complex systems. Friedenberg (2008) contains a more extended argument for the existence of artificial selves.

PRIMARY TERMS: PERSONHOOD, SELF, AND IDENTITY

Throughout this book we will use several primary terms. These are person, human, self, and identity. These four terms are interrelated, and at times it can become difficult to tell them apart. Even researchers sometimes use the terms interchangeably. We will make an attempt to differentiate between them here. To be human is to be a member of the species Homo sapiens. This is a biological and genetic standard. It is equivalent to saying that being human is what makes you different from other animals. Human and person are mostly equivalent terms. Almost all people are human. It might be argued, however, that a fetus, although human, is not a person and therefore does not have a right to life. This is a legalistic standard. Note also that a human under this notion becomes a person once he or she undergoes sufficient developmental change. When exactly one crosses this border from human to person is of course the topic of strenuous debate.

Some writers equate human and person with self and identity. However, it is generally acknowledged now that a single person can have multiple selves or identities. Thus human and person are the more general terms while self and identity are more specific. Despite some distinctions in the literature, we will equate the concepts of human and person in this book, treating them as the same thing. We will also equate the concepts of self and identity, treating them the same way. A good heuristic is to think of human/person as what makes us collectively different from animals and to think of identity/self as what makes an individual person different from other individual people.

Identity and self provide an answer to the question “Who am I?” They are descriptions of individual nature. Identity and self can be described using a list of attributes, values, and motives. Constancy versus change is a common theme in identity research. Does one stay the same or change as time goes by? If one changes, then the term dynamic identity is sometimes used. Identity can also be thought of as the image one projects to family, friends, and society. Note the similarity here with roles and role playing from sociology. We may often struggle internally when forming our identity, but what others think of us is certainly important. Thus we have a personal identity and a social identity, the former being who we think we are, the latter being who other people think we are.
THE PSYCHOLOGY OF PERSONHOOD

Before understanding self and identity we need to gain a fuller comprehension of personhood. The primary question here is, “What does it mean to be a person?” or “How do we define a person?” The question is not an easy one and requires the adoption of multiple perspectives. In the following sections we will sketch out some answers from historical, evolutionary, and social-developmental approaches.

It is remarkable that over its extended history psychology has had relatively little to say about people, even though this is what the discipline professes to study. This is because psychology traditionally has been reductionist in its approach. It has focused on the thoughts, emotions, and actions that make up a person but not on the person as an integrated whole. This has changed in recent years, and many researchers across the discipline are now studying the person from a holistic and more integrated perspective.

Human beings are now understood as social beings who are members of a community. It is understood that while they have bodies with biological features, these features are expressed within a sociocultural world. Some of the properties considered vital to humans are self-awareness and self-understanding, a reasoning intelligence, the use of language, the ability to take and integrate different perspectives, a moral concern, agency including intentionality and the ability to act or refrain from acting, and finally the creation of culture (Martin & Bickhard, 2013).

People can also be described in terms of five main concepts. The first is personality, which is a unique combination of temperament and dispositions. We examine the personality approach extensively in chapter 3. The second is identity, which is anchored by physical characteristics, social positioning, and circumstances. The third is autobiographical memories, which are recollections and reflections from our past. There is also character, which is judged by conduct and circumstances (Martin & Bickhard, 2013). Finally, people are considered to be morally responsible, meaning that they need to answer for their deeds.

PERSPECTIVES ON PERSONHOOD

Historical Perspectives

The study of personhood has been going on for a long time, at least as far back as ancient Greece and Rome. The Romans thought of a person as a legal entity. In 160 CE the scholar Gaius said that the law pertains to persons, things, or actions. In the case of theft, the thief and the victim would be the persons, the things would be the objects stolen, and the action would be the theft itself. In Roman society, young children and women were considered minors and under the guardianship of their husband or father. Slaves were not considered people at all. Personhood was only something males could attain by reaching a certain age of maturity. At this age, the man could be held responsible for his actions.
The legal concept of a person may be revisited in the near future. If we consider robots to be people, then they are responsible for their actions. That means if they steal they can be “punished” or treated equivalently in some way by a system of law. If they are deemed nonpersons, then they are nothing more than objects and can be considered property, being owned and controlled by people—that is, slaves. Critical in determining personhood here is the notion of moral responsibility. If a robot knows that stealing is bad but does it anyway, then culpability can be more readily assigned. Also, if robot or software selves must undergo a learning period before they can acquire full cognitive capability, then legally they might be treated as “minors,” and their primary caregivers would thus be held responsible for their actions.

Cicero (106–43 BCE) was among the first to note that a person, like an actor, puts on different masks to play different roles in society. These different roles come with different obligations or social duties. For example, a father has the obligation to care for his family. Cicero mentions four kinds of responsibility. The first is that a man ought to be a rational human being, not like an animal governed only by impulses. Second, he needs to be true to his own unique makeup. Third, his social position, such as coming from a rich or poor family, or being a figure in public office, imposes social responsibilities. Fourth, we need to recognize the consequences of our own life choices, such as deciding on a particular career. Cicero believed that each person ought to act as well as possible, always trying to improve or perfect himself. What is interesting about this conception is that there is no real notion of the individual as apart from a person’s roles and obligations to society.

This notion of a person as a social construct will come up again in the philosophy chapter. An artificial or digital self, such as a robot or software program, will most likely need to interact with people. Thus it will need to be able to “put on different faces” to play different roles in society, and to interact effectively it will need to be able to read social cues such as facial expression and vocal intonation. Programs such as this already exist and can even recognize fake smiles, as not every human can do. Artificial people that are special purpose and perform only one function may not need to play different roles. Domain-specific AIs that can only play games or pick stocks do not possess general intelligence and as a consequence seem less human. It may be that playing different social roles and accommodating to the complex and changing needs of those around us is what drove the evolution of intelligence and personhood in our species.

Later, with the rise of the Catholic Church, persons were considered only those with rationality. An essential feature of a person was his or her immortal soul. Although God was assumed to give everyone a soul, it could also be qualified with regard to baptismal status, in the sense that the process of being baptized could confer complete personhood and acceptance within the religion for those who came from outside the faith. Perfection was also emphasized in medieval theology. A person was regarded as imperfect but could potentially become perfectible. This is evident in confessional texts where individuals compare themselves to beings more perfect than they are, such as saints. Imperfect beings could attain various degrees of worthiness depending on their social standing and moral conduct.
By the seventeenth century there was for the first time an emphasis upon the individual. René Descartes (1596–1650) focused upon thinking as the standard of personhood in his famous quote “I think, therefore I am.” Thomas Hobbes (1588–1679) claimed that people are naturally solitary but are forced to interact with others. He said that people need what others have and that to get what they need they enter into “bonds” or contracts, restricting power and obliging some to render services to others. It is these contracts that enable people to live with one another, since otherwise humans have inherently antisocial tendencies. Despite this social approach, Hobbes believed that a person as an individual was responsible for his actions.

John Locke (1632–1704) and Jean-Jacques Rousseau (1712–78) wrote about the complex inner life of individuals. It was this “inner life,” filled with perceptions, thoughts, and feelings, that would dominate the view of a person well into the twentieth century. Locke believed “consciousness” was the inherent characteristic of an individual. What made a person in his view was a constant awareness of oneself as being the same entity now as in the past, emphasizing continuity over time. Locke distinguished between consciousness and a religious soul, saying consciousness was a feature of reality and thus amenable to introspection and scientific study. Locke influenced Thomas Jefferson (1743–1826) and the founding fathers in the US to conceive of people as having individual rights such as freedom of speech and the right to bear arms. They believed the primary function of government was to defend these rights. A society in their view was supposed to be free, allowing people to pursue their own ends, among these being the pursuit of happiness.

Evolutionary Perspectives on Personhood

We commonly understand ourselves to be the same as others, yet different from others. This is reflected in our use of the words self and other. We can say, I am a “self” to me and an “other” to you, while you are a “self” to you and an “other” to me. There is an implicit understanding in these statements that people all belong to the same class or category but that we can still differ from each other. This ability to differentiate self from other, and in particular to know that others are like us mentally, is a key development in the process of personhood. One of the goals of psychology is to explain how we come to acquire this belief (Barresi, Moore, & Martin, 2013).

The philosopher Peter Strawson (1919–2006) conceived of people as objects with material properties that apply to all objects (M-predicates) and psychological properties that apply specifically to persons (P-predicates). He thus acknowledged that humans are physical creatures that differ from other creatures in such abilities as reason and language. In simple actions like walking, according to Strawson, physical movements (M-predicates) and psychological properties (P-predicates) are mixed, and the intentionality of the person (his or her goal-directed behavior) can be seen directly in that person’s movement. We can compare such behavior to our own and realize that other people can have the same goals (walking to get somewhere) as we do. But in other, more complex group actions, other people’s behaviors and goals can differ. So in those cases, how can we understand other people’s goals?
Of importance here is reciprocal altruism. Simply stated, this is the notion that if you treat someone well, that person will generally return the favor and treat you well. It was the need to engage in joint cooperative activities and mutual aid over time with the same partners, where self and other were treated equally, that made the concept of person necessary (Barresi, Moore, & Martin, 2013). In this view the practice of reciprocal altruism among hominids in early human history laid the basis for the concepts of self and personhood. It enabled us to differentiate between self and other and to determine that other people can have goals or mental states like our own. The notion that other people have minds and intentions like our own is called a theory of mind. The ability to have a theory of mind is a necessary ingredient for being a person, according to this view.

Comparing the abilities of chimps, our nearest genetic animal relatives, can help to clarify the development of personhood. Chimps live mainly in the present, and although they live in social groups with unrelated individuals, their cooperative actions tend be with fellow family members only. They tend to ignore or compete with fellow chimps who are not members of their family. Chimps do not act with regard to a distant past or future. In contrast, people cooperate with others who are not family members. We can also think about the far past and future. We can engage in “mental time travel” to imagine past and future events from different points of view, our own and that of others (Moore & Lemmon, 2001).

In addition, chimpanzees can act now for goals that will be achieved in the future, but they can’t do so by delaying gratification of any current desire. In comparison, a four-year-old human child can suppress an immediate desire for a greater future desire. In the classic “marshmallow” test, children are told they can have a small amount of candy now or, if they wait, a greater amount of candy later (Mischel, 1968). Despite individual differences, nearly all children above the age of four are able to wait for a greater future reward. This is something no known animal can do and like rationality is an important feature of being human.

Let us illustrate this with an example. Two genetically unrelated cavemen, “Og” and “Ug,” are out hunting. Og sees a group of gazelles nearby, and if he immediately throws his spear he will be able to kill one and get the meat. However, he and Ug have agreed beforehand on a plan. He has agreed to drive the group of gazelle toward Ug, who has several spears and will be able to kill three gazelles as they run past in a panic. In this way the two of them will be able to bring back more meat than if either one acted alone. So Og delays gratification of his immediate desire and follows the plan.

This example illustrates all of the skills we noted above. Og and Ug are engaging in cooperative behavior even though they are not genetically related. They can suppress their immediate desires. They are able to imagine what the future is like, and this imagination takes both their own individual perspective and the other’s perspective into account. Ug must imagine Og scaring the group of gazelles to stampede before he has actually done it. Og must imagine Ug spearing them as they run past. In this way the two of them will be able to bring back more meat than if either one acted alone. So Og delays gratification of his immediate desire and follows the plan.

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theory of mind. Og must know that Ug thinks as he does, gets hungry as he does, and so on. In other words, Og knows Ug is human, like himself. Each has acquired that status of personhood, of having selves.

What is unique about human reciprocal altruism is its basis upon a concept of person that can be applied equally to ourselves and others, that involves a common ability to calculate costs and benefits across different perspectives, and that extends across time. With these abilities in place, even long-term relationships of reciprocal altruism are possible. This produces a sense of justice, whereby large groups of individuals that mutually recognize each other as persons can act cooperatively. Justice may also allow us to treat strangers in a kindly manner. Also of note here is that future planning becomes much easier with the use of language. Language of course presupposes the idea of personhood and a theory of mind because it is a way of communicating thoughts between different minds. It is not clear which of these skills came first: planning and a sense of the future, a theory of mind, or language. They may have all coevolved, reinforcing each other over time.

Imagine an agent that exists with others of its kind in a world. This agent values its own survival but needs to acquire resources from its environment in order to do so. This resource acquisition requires work. The agent has several options. The first is that it can go it alone without dealing with others. This has some advantages, namely that the agent can do what it likes and not take others into account. However, it will probably die because the benefits of working in a group in most situations are so much greater. So the second option is group interaction. In this case there are two primary forms of interaction: competition and cooperation.

Competition means taking what one wants from someone else and not caring about the consequences. The primary drives here are aggression and domination. This approach also has mixed benefits. Bullies and dictators often get what they want this way. But they rarely do it alone. They must recruit others to their cause to support them and partake in the spoils while at the same time having others, such as slaves, do their work. The downside of this approach is that one makes enemies, and this can often get the bully deposed and killed. The second group option of cooperation means working together with others to obtain survival needs. Here the primary drives may be considered love, empathy, and other qualities that result in group bonding. In cooperative societies there are also downsides, like conformity and the suppression of individual deviance. Reciprocal altruism probably operates in both forms of societies. As mentioned above, the formation of identity and self is most likely to occur in groups where agents must interact in order to survive.

In natural ecosystems we see competition and cooperation at the individual and group levels, so all of these possibilities seem to exist in nature. There may be some optimal mixture of these strategies that promotes survival, but it is always dependent on current environmental demands in the form of selection forces. One factor not mentioned yet is reproduction. If an agent needs to mix its genes or coding instructions with others, then it is forced to interact and must live in a group setting (sexual reproduction). This is not a strict requirement, and loners that can reproduce on their own with some variation, like whiptail lizards and stick insects, are possible (asexual reproduction).
Although we think of groups and evolution mostly in terms of biological evolution, this need not be the case. Robotic and software agents can have artificial origins. They can exist in real or virtual environments and be subject to evolutionary pressures in the same way live organisms are. All three possibilities are also open to such agents. They can live autonomously or in groups with a competitive or cooperative basis. In fact, evolutionary simulations of artificial agents have been studied for quite some time, and the ways they organize and behave are quite similar to those seen in nature. See the discussion on evolution and robotics in chapter 5 and the section on artificial life in chapter 9 for more on this topic.

A question we can ask in this context is whether an artificial agent could, on its own and without prior programming, develop a sense of self and identity. Imagine a computer simulation of such agents. Would they be more likely to acquire a self if they evolved in a group as opposed to an individualist setting? One could vary different parameters to see their effect. For example, one might predict that as the amount of communication and mutual dependency between members increases, the likelihood of identity development should also increase.

Many of these issues also come up in our usage of social media. Most of us get onto platforms like Twitter, Facebook, and LinkedIn to meet others, solidify our group bonds, and promote our success and social standing. Meeting others can be for reproductive or nonreproductive reasons. Stronger social bonds means that someone may be more likely to come to your aid in the future. Promotion of social status can help others to think more favorably of you, which can increase your chances of getting interviewed or hired for a job, for example. This can also lead to greater prospects of future survival and flourishing. Digital meeting places serve many needs, but it is interesting (perhaps disheartening) to see that most of us devolve back to these most basic forms of group interaction when we go online.

Social-Developmental Perspectives on Personhood

Social psychology looks at how our interaction with others affects what we think, feel, and do. The theory of reciprocal altruism described above is thus both a social and an evolutionary theory. Developmental psychology looks at changes over the life span of individuals. This is in contrast to evolutionary psychology, which examines changes over the time span of species. In this section we will examine a social theory, called position exchange theory (PET), and show how it can account for the development of personhood, that is, within a life span (Gillespie & Martin, 2014). PET is not only a social or developmental theory. It can be applied equally to the evolutionary cases we have just considered.

Many social activities consist of different yet complementary positions. For example, talking involves being both a speaker and a listener; negotiating involves proposing and considering; and nurturing involves caring and being cared for. Each action involves a specific social role and set of expectations about what each person will do in each position. Buying food involves two social positions, a buyer and a seller. Each position involves the other position, because one cannot be a buyer without there being a seller. Both people, to successfully carry out their role, must appreciate the perspective of the other. Being a buyer makes us a better seller, for instance, because we can appreciate the motivation to save money. PET says
that the exchange of social positions forces the adoption of alternate perspective taking, which drives the development of personhood.

We begin to exchange positions very early in development. This may involve leading and following in exchanges of facial expression, imitating during peek-a-boo, hiding and seeking, or catching and throwing a ball. This may explain the importance of games for children. Later in development the use of language also requires position exchange. When speaking, one must imagine what it is like to adopt the perspective of our conversational partner. After acquiring language a child can participate in various media like books, films, and the internet that call on even greater position exchange. When reading a novel, we adopt the position of the hero and the various characters. When playing a video game we adopt the position of the avatar. PET forces us to know what it is like to be someone (or in the case of avatars also something), thus helping us to create a theory of mind and to know that we, like the others around us, are human.

NON-WESTERN VIEWS OF SELF

Many of the views on self in this book come from the Western and scientific traditions. However, it is worth delving at least briefly into the ways other cultures understand this concept. Western notions of self center on an internal “man,” or homunculus (Mosig, 2006). It is this figure that does the thinking, doing, and feeling of the self. This figure appears in many guises. It can be Freud’s id/ego/superego combination, Adler’s (1927) creative self, or Rogers’s (1961) ideal and real self. Each of these posits an internalized central figure that is the source of experience and action. In theistic conceptions, this homunculus is roughly equivalent to the soul.

In the Buddhist tradition there is no such thing. The personal self is believed to be an imaginary false belief for which there is no corresponding reality (Rahula, 1974). This incorrect view of self is believed to produce harmful thoughts of “me” and “mine” and to produce selfish desires, attachments, and other negative ideas like pride, hatred, and conceit that are considered the source of the world’s problems. Much of Buddhist practice is aimed at eliminating the personal self, resulting in happiness at the individual and social levels.

The self, like everything else in the universe, is conceived of less as an object than as a composite relation or configuration. Humans, like all “things,” are made up of parts. It is the relationships between these parts that determine something. These relations are like gestalts in psychology. By the Gestalt law of proximity we can perceive three dots as forming a whole only because they are close together. The whole in this case is “more than the sum of the parts”: it consists also of the spatial properties that link the parts together. This view is similar to patternism and functionalism, which define self not as material parts but as the patterns and functions they perform.

In Buddhist psychology, a “person” is a composite of five groups of elements called skandhas that make up form, feelings, perceptions, impulses, and consciousness. When these are working together we have a person. If they are removed, the person and
corresponding sense of self disappears. The skandhas themselves also exist relationally: any single one exists because of the other four (Mosig, 2006). All of what we think are things are there only because of other things. When these arrangements cease, so does the “thing.” This notion of impermanence is central in Buddhist belief. The temporary gestalt formed by the skandhas that produces the illusory self is called the anatta. Realization of this does not diminish the self but instead is supposed to empower a person, as one now understands that one is part of a larger interconnected world. One’s self effectively disappears and becomes the universe. The realization of this is called enlightenment. It is supposed to bring about increased compassion for others, since there is no difference between one’s self and others.

A FEW MORE IDEAS ON THE SELF

One very important issue concerning the self has to do with materiality and the physical world. It might be quite easy to think that our self is our brain or our brain plus our bodies. However, the chemicals and molecules that make up our bodies are constantly being changed and renewed. Even in the brain, where neurons have a fairly long life, the components that make up the neurons are being replenished. One way around this is to adopt a position known as patternism. In this view our selves are the patterns of neural activation that occur in our brains. It is this pattern, presumably unique in each individual, that captures the nature of self, not the materials that make it up. Some transhumanists go even further by saying that this pattern can be copied and placed in another substrate like a computer so that the self can live on after death.

A number of other definitions of self have been proposed. One is that we are defined through our memories, that our history is who we are. There is some merit to this notion. There is no doubt our past has influenced who we are, but many forces shape our identity, including the present. An argument against this is that the past is who we were, not necessarily who we are. It is perhaps more accurate to say the self is our characteristic way of responding at any given moment in time. This is the view of personality theorists who measure the self in terms of traits. Traits are simple one-word descriptions, like “outgoing” or “perseverant,” that describe the way a person would act in a given situation.

Another, more social concept of the self can be measured as the effect we have on the world. Each of us in a lifetime affects the environment in some way. We get married, have children, and forge a career. All of this adds up to a constellation of changes in the world. We affect the way other people think and the way our children act. We write poetry and books, paint paintings, compose music, or help build a skyscraper. Many of these achievements are a legacy that has drawn on our unique creativity as individuals acting alone or in conjunction with others. According to this definition the self is the legacy we leave behind. Some individuals may opt to preserve the things they have created in a time capsule. Alternatively, an electronic version of our accomplishments could be created and shared with others.

We have a lot more to say about the self later. Chapter 2 provides a philosophical introduction to this topic, surveying historical theories on personhood, self, and identity. Chapter
We next introduce a much more modern take on the self, which is whether a technological or artificial version of one could exist.

THE ARTIFICIAL SELF

Varieties of Artificial Selves

Before continuing, it is worth defining several important terms, as we refer to them repeatedly throughout the book. In the definitions listed below we start with the most general and farthest removed from what might be considered human and work our way slowly toward the concept of an artificial person or self. Figure 1 shows examples of artificial beings.

A machine is any mechanical or organic device that transmits or modifies energy to perform or assist in the execution of tasks. Machines typically require some energy as input and accomplish some sort of work. People have designed and used mechanisms and machines throughout much of recent human history to facilitate the performance of jobs. Note that work in this sense can be physical, as is the case with an elevator that can lift loads, or purely computational, as is the case with a calculator that is used to add a list of numbers. Note also that according to this definition a machine can be mechanical, made of fabricated or synthetic parts like gears or circuits, or biological, consisting of organic molecules.

A computer in the most general sense is a device designed to represent and compute information. The hallmark of a computer is that it is incapable of interacting with the physical world. A computer can pass information back and forth through space with other computers via a network, but unless connected to some sort of actuator, like an artificial limb, it is incapable of acting on objects in the world. A computer can therefore manipulate information but not material objects.

An avatar is a representation of an entity, human or otherwise, that exists inside a software program like a computer game. Avatars are controlled using a joystick, game controller, or virtual reality glove. Avatars can also be controlled by artificial intelligences. It may be possible to upload or transfer an individual’s mind into an avatar, in which case the person might be considered as having become the avatar (Damer, 1998).

A robot, on the other hand, is a construct that is capable of moving around and/or interacting with the physical world with some degree of autonomy. Some robots are in a fixed position (such as those in an assembly line) but can move objects using arms or other effectors. Others are capable of moving about under their own power and are called mobile robots. Likewise, human operators control some robots while others have autonomous control over their own actions. Robots can but need not look like people (Ichbiah, 2005).

A cyborg or cybernetic organism is a creature that is a mix of organic and mechanical parts (Benford & Malartre, 2007). By the stricter definition of the term, a human cyborg is someone who has had some basic physiological function replaced by an embedded machine part. A person with a pacemaker thus qualifies, but someone wearing contact lenses or using a mobile phone does not. Cyborgs bring up many interesting questions. Imagine a