I

THE TANGLED WEB

"Oh what a tangled web we weave, when first we practice to deceive!"
Sir Walter Scott [1]

"'It was extraordinary to observe …', William Henry wrote later how willingly persons will blind themselves on any point interesting to their feelings."
Doug Stewart [2]

INTROCEPTION TO DEDUCTION

Deception is a part of life. Deception can be regarded as one of the essential characteristics that energize the very struggle for life itself [3]. The process of deception permeates virtually all of the animal kingdom [4]. Indeed, the occurrences of, and variations in, the capacities of animals to camouflage themselves and deceive their natural predators had a profound influence on Charles Darwin and the first conceptual development of his theory of evolution. Deception is also something we encounter throughout our personal lives. It is a behavioral characteristic that forms the basis of some of our original cultural narratives. For example, Homer's Iliad, one of the earliest of all human recorded stories, recounts a tale in which the deception of the Trojan Horse plays the central role. The Bible itself proposes that the present form of human existence began with two acts of deception: the first was the Devil's deception of Eve and the second was Eve's subsequent deception of Adam [5]. It is within such religious narratives that we find the first links between deception and sin. As a result, we often conceive of humans involved in deceptions as doing something that is "bad" or even "evil." In general, we have come to consider it wrong to deceive others.

There are, however, cultural differences in such a perception; some groups consider it an obligation to deceive the outsider. A recent and very

FIGURE I.1. A camouflaged stonefish. A highly dangerous species is hidden here from its enemy by the ability to blend against the background conditions [6].

interesting text [7] has suggested that there are evolutionary imperatives to deceive, and that our current mores on deception are simply one transient perspective that time may well change. In the larger animal world, we can see that deception may not be a bad thing at all. Rather, deception often proves to be the difference between life and death and the key to an individual's survival.

With respect to the animal kingdom, most deceptions involve deluding the senses. Instances of these sensory deceptions are one of the major dimensions of the ever-continuing battle between predator and prey. Adaptations that provide camouflage for one organism thus serve to misdirect the actions of specific others. In this enterprise, some animals are spectacularly successful (see Figure I.1). They exhibit capacities that enable them to change their color, shape, and effective size, and in many situations to seek out background conditions that render them virtually invisible. These are indeed wonderful capacities and characteristics and are worthy of extended study in and of themselves [8]. Although our human abilities for deception must have originally been founded upon these basic animal characteristics, the present text is not primarily concerned with such

sensory forms of deception. Rather, the focus here is on more advanced forms of deception that I have termed "cognitive deceptions." These types of deception are almost uniquely human in nature.

WHAT ARE COGNITIVE DECEPTIONS?

Deceptions represented by animal camouflage are designed to fool the senses. These sensory deceptions seek to mislead the perceptual capacity of any searching predator in trying to detect their prey. At the top of the food chain, there is relatively little need for disguise and camouflage. Until human beings invaded their realm, larger animals, such as elephants, had very little to hide from. Nowadays, of course, it is no longer the case that animals at the top of the food chain have nothing to fear. Sadly, whole species of large animals that in the past had no need to resort to deception to survive have now fallen prey to human predators. However, humans prey on each other as well. In this respect, we have cause to fear our own kind. We can see evidence of the need to camouflage ourselves from each other, as expressed most formally in military conflicts. Using the knowledge of intrinsic human sensory capacities, armies over the centuries have generated any number of forms of perceptual camouflage. These range from the personal camouflage of the individual soldier (see Figure I.2) to hiding whole armies from the sight of the enemy [9].

Across the centuries, military camouflage itself has become ever more sophisticated. Advances range from the ability to hide whole cities during the Second World War to the counterintuitive but surprisingly effective naval "dazzle" camouflage [10] that served to render large ships on the high seas extremely difficult to detect. As military detection capacities have progressed beyond the unaided human eye alone, technological forms of camouflage have advanced in turn. For example, in response to the invention and technological refinement of radar, we now have "stealth" airborne and seaborne craft that are purportedly invisible to radar detection. The predator-prey forces that act to fuel innovation through evolution in the natural world exert the same influence in the technological realm of the military arms race.

The antithesis of camouflage is conspicuity. Whereas camouflage tries to perfect the art of remaining undetected, conspicuity represents the active effort to attract attention. Conspicuity research, in addition to taking the negative lessons from the research on camouflage, has looked to benefit from cognitive psychology and what is known of the issue of attention. Conspicuity research involves very important practical topics such as

FIGURE 1.2. The military often seek methods to improve sensory deception in order to limit the detection capacities of an enemy [11].

road safety. The same fundamental understanding of the basic processes of human perception and attention are found in both areas of being seen and not being seen. They are two sides of the same coin [12].

Although the forms of the deception I have cited so far involve an interaction between sensory capacities and the higher cognitive abilities of an individual, they are not cognitive deceptions per se. Indeed, cognitive deceptions involve little if any purely sensory misdirection. The item or entity of concern does not hide itself away in any fashion. Rather, many of the forms of cognitive deception discussed in this book actually seek the limelight. They look to make themselves conspicuous and the focus of attention. Colloquially then, we can say that cognitive deceptions do not look to fool the senses but rather to deceive the mind. As such, cognitive deceptions are often bound by their cultural context. Cognitive deceivers therefore need to understand much more about the individual or social group of individuals whom they look to deceive than just their common sensory and perceptual capacities. As a result, *a good cognitive deception proves to be almost as much about the deceived as the deceiver*.

In terms that are more theoretical in nature, cognitive deceptions can be defined as *acts of miscommunication*. This miscommunication may derive from the intentional action of an individual(s) to deceive others.

Equally, however, such miscommunication can arise from problems within the channel of communication between the inadvertent deceiver and the inadvertently deceived. One can think here of a communication channel in terms of one of its most common examples – a telephone call. So, for example, someone might choose to lie to you over the phone, but it is equally possible that the reception may simply be poor and you may well have trouble understanding exactly what the caller said. The latter problem is technically called "noise" in the communication channel, and the nature of this noise effect has been studied extensively for nearly a century or more [13]. Although the noise involved might well be unwanted sound, as in the phone call example [14], technically, noise represents any barrier to clear communication. Thus, smoke drifting across line-of-sight communications such as a semaphore system is still technically considered noise. If the noise (the source of interference) to signal (what is intended to be communicated) ratio in the communication channel is sufficiently high, interpretational failures can well occur independent of any individual's conscious intention to deceive. Think, for example, of a game of Chinese whispers (sometimes also called "telephone"), in which a message is passed around a circle of people and eventually returns in a form very different from the original one.

Given that miscommunication also necessarily involves an original source of reception, it can also occur because of the inability of the person receiving the information to interpret it correctly. So, while the original transmission of source material may be both clear and veridical, and the communication channel both efficient and effective, it might be that the receivers themselves are in some way limited or incapacitated in their act of interpretation. This often leads to frustrating (for some) or amusing (for others) situations in which people delivering the message in turn misinterpret the hearer's incomprehension as the inability to hear the message well. Witness those people who speak louder to try to get their message across to someone who doesn't speak their language! This latter problem of message interpretation can lead to the paradoxical but interesting circumstance in which this incapacity defeats the deceptive intent of the individual or group generating an intentional deceit. For example, one can send a written message that is deceitful in nature, but if the individual receiving it is illiterate, then the goal of the deception is defeated. Such issues are very much the concern of those who would actively seek to deceive others for whatever reason [15].

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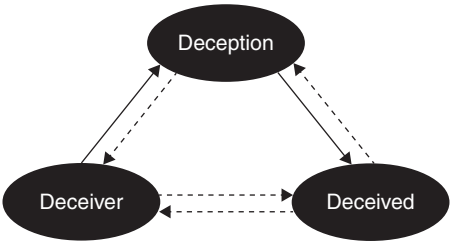

FIGURE I.3. The "Trinity of Deception." Although it might seem that the relationship is simply from the Deceiver to the Deceived via the Deception (the solid arrows), the relationship is actually more complex and interconnected.

THE TRINITY OF DECEPTION

From the foregoing discussion, we can conclude that there are *three essential elements of deception* [16]. These elements are common across all deceptions whether they are based on sensory/perceptual illusions or are primarily cognitive in nature. I have termed these three elements the *trinity of deception*, and these are illustrated in Figure I.3. The first component is the original source of the deception. As noted, this source may be an individual intent on deceiving, or the source of the deception may arise from the environment. For example, we may see a particularly interesting and evocative shape in a cloud, or even the Virgin Mary in a grilled-cheese sandwich, which may appear suggestive but are actually natural phenomena [17]. These sorts of spurious pattern recognitions, or instances of *pareidolia*, happen all the time, sometimes with funny and sometimes with tragic results. Although these "natural" deceptions are informative, the central topic of this book concerns situations in which the deceiver (the source) is an actual individual or group of individuals. Their intentional purpose is to convince others to believe something about the state of the world that is untrue.

We can see here that the purpose of cognitive deception is not solely to confuse others, although this may certainly be a part of the process. *Cognitive deceptions almost always go beyond pure confusion in that they seek to actively inculcate a specific belief in others about the true state of the world*. This belief, of course, turns out to be a false one. This induction of false belief is facilitated by the process known as *apophenia*, which is when one draws cognitive linkages between unassociated items or events. The eventual outcome of this false belief can range from simple embarrassment over being "taken in" to much more serious consequences.

The second component of deception's trinity is the conduit or medium by which the deception is communicated. This medium can be an artifact, a

physical entity, but it can equally well be information expressed in the form of spoken or written language. It also can be represented by a person acting as an imposter [18]. In today's world, the medium is often computational in nature and based on information networks like the Internet [19]. The conduits discussed in this book are all physical artifacts, but it is important to recognize that this need not necessarily be the case. As we shall see, the conduit is an essential bridge, since its characteristics must be understood in a shared manner by both the deceiver and the third component of the trinity of deception: the deceived.

The medium itself presumes some common and shared assumptions. For example, you might send a false message, written in a foreign language, which is intended to deceive me in some fashion. However, because I do not speak or read that language, I cannot be led toward the belief that you wish me to adopt via this message. This, of course, is a facile example. In a real-world situation, I would almost certainly endeavor to find a translator and then have to assess the value of that translation itself as well as the content of the message itself [20]. In light of this latter assessment, I would then have to temper my belief about the content of the message and whether to believe it or not [21]. Indeed, my belief might well be swayed by the fact that it *is* in a language I can neither speak nor read. However, one central principle holds: *the deceiver and the deceived must have some common medium through which to interact*. Therefore, the conduit or medium of the message is always an important constraint upon deceit.

The third and final part of the trinity of deception is, as previously mentioned, the deceived. One might easily envisage the deceiver as the active participant and the deceived as the passive recipient in the process of deception. However, this is not necessarily so. Often the deceived individual plays a very active, albeit unwitting, role in the whole process. Many questions emerge as to what degree the deceived "wishes" to, or indeed can, be deceived. Obviously the more the deceiver can co-opt the active participation of the deceived, the more likely the deception is to succeed. Thus, the deceived must frequently prove to be fertile ground in which to plant a false assumption. Often this means that any deception has to address an issue or concern that the eventual recipient is interested in or preferably passionate about. For, as we were warned by Francis Bacon in his observations of the early seventeenth century, "Human understanding . . . is infused by desire and emotion, which give rise to 'wishful science.' For man prefers to believe what he wants to be true. He therefore rejects difficulties, being impatient of enquiry" [22]. It is a principle to which we shall return. While the world has moved on in a technical sense since Bacon's time, it is clear

that certain basic aspects of human nature remain, tragically, very much unaltered.

From the foregoing discussion we can see that a number of constituents are required for a successful deception to occur. The originator of the deception must, through either intentional or inadvertent action, create a message that transmits information about the world that is incorrect in some way [23]. This message must be transmitted through a communication medium, but the overall deception may or may not be facilitated by imperfections in that medium. Here, failures of efficiency in the communication medium can act to mask or even sabotage intentional deception. Conversely, these self-same imperfections can act to facilitate unintentional deception. The origin of the information and its transmission medium are thus necessary but not sufficient conditions for deception, for there must be an individual or group of individuals who receive and interpret this information about the state of the world. The inherent capacities and biases of this person, or group of persons, directly influence the degree to which any deception is successful.

There is one other interesting dimension, and that is the power of numbers and statistical probability. We must emphasize this because, in fact, deceptive messages abound in both the natural world and human society. On a statistical basis, many of these messages will prove completely ineffective and others will be only marginally impactful. However, a proportion of these messages will prove to be totally convincing, at least to some recipients. It is, of course, one of the most interesting elements, and one of the paradoxes, of the science of deception that the most successful deceptions are never discovered. Completely and absolutely effective deceptions are essentially accepted as reality. Intriguingly, in philosophical circles, the question of whether reality itself is actually such a form of deception has been debated now for many centuries [24].

Let us recapitulate here. Cognitive deceptions are not sensory illusions; they have to do with "sleights of mind," not sleights of hand. Cognitive deceptions are not primarily composed of misdirections of the senses, but are much more linked to temporary or permanent degradations in capacities such as memory, attention, and decision making. Cognitive deceptions are incorrect beliefs about the true state of the world. Such misunderstandings may arise because of a person misperceiving natural but confusing signals in the environment, but in human society, they much more frequently derive from the actions of another individual who either intentionally or inadvertently acts to misrepresent reality. While they can be fleeting events, many of the most interesting forms of cognitive deception

are on permanent display and challenge us to unravel their story through precise measurement and quiet contemplation rather than through affective response or strident, polemic partisanship.

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DECEPTION: FROM THEORY TO PRACTICE

Up to this point, I have been dealing with some of the more formal and technical sides of the issue of deception, setting up some of the major premises that I will consider and develop in later chapters. However, this book is only partly concerned with these scientific dimensions. I also aim to provide a more general level of coverage that is accessible to a wider audience beyond staid academic circles. To that end, I have provided illustrative examples through a series of stories that serve to articulate the central points made in the more formal chapters. Indeed, these stories can be read as stand-alone accounts of the specific items, instances, or objects that have become the source of contention. Of course, these stories could take any number of forms. For example, we might look at cases of state or industrial espionage in which authorities or institutions were fooled in some manner. Examples of these sorts of deception abound [25]. Equally, we might look at deceptions in military maneuvers, marketing scams, or even modern diplomatic activities [26]. As appealing and, paradoxically, popular as these examples are in the contemporary world, my focus here is less on the airing of currently controversial issues and much more on the "classic" forms of potential cognitive deception.

In what follows I have provided a sequence of accounts that are based mostly on physical artifacts. This selection provides a degree of "concreteness" to the illustrative stories chosen. The first of these concerns a cross discovered in what is purported to be the tomb of Britain's legendary King Arthur. As we shall see, local authorities derived much benefit from this discovery. As always, how much money is generated and where it ends up provides interesting and important clues about deceptions, their origins and motivations. The second story revolves around the discovery and potential "ownership" of California. This story of deception proves just how seduced we can be when we see what it is we wish to see rather than what actually is. It is living proof that Francis Bacon's principles still operate today. Armed with these initial observations, I hope the reader will begin to distinguish some of the patterns and threads that make up the psychology of cognitive deception. After these first stories, I return to the more formal elements of

cognitive deception seeking to understand how they find their foundations in the science of experimental psychology.

REFERENCE NOTES

[1] Scott, Sir Walter (1771–1832). *Marmion, Canto vi. Stanza 17.*
[2] Stewart, D. (2010). *The boy who would be Shakespeare: A tale of forgery and folly.* Cambridge, MA: Da Capo Press.
[3] Schrodinger, E. (1944). *What is life?* Cambridge: Cambridge University Press. See also more popular treatments such as Macknik, S. L., & Martinez-Conde, S. (2011). The illusions of love. *Scientific American Mind*, January/February, 18–20.
[4] Searcy, W. A., & Nowicki, S. (2005). *The evolution of animal communication: Reliability and deception in signaling systems*. Princeton, NJ: Princeton University Press.
[5] Chaline, E. (2010). *History's greatest deceptions and the people who planned them*. New York: Quid Publishing.
[6] Retrieved from: http://commons.wikimedia.org/wiki/File: Stonefish in the Red Sea (with Flash).jpg. Dukachev, S. S. (2006). Stone fish in the Red sea.
[7] Stevens, M., & Merilaita, S. (2009). Animal camouflage: Current issues and new perspectives. *Philosophical Transactions of the Royal Society B*, 364(1516), 423–427.
[8] Trivers, R. (2011). *The folly of fools*. New York: Basic Books.
[9] There are many examples of this sort of large-scale military deception. Among the more famous ones are the attack by Arminius on the legions of Publius Quinctilius Varus at the Battle of the Teutoburg Forest in AD 9, the surprise attack on the Lancastrian flank at the Battle of Tewkesbury on May 4, 1471, and Wellington's strategy at the Battle of Waterloo on June 18, 1815. These deceptions continue to persist in all forms of modern conflict, as represented by the following examples. Associated military tactics have been specified by Whaley as:
- MASKING consists in erasing attributes in the environment to make the core invisible/not present.
  - *Camouflaging*
- DECOYING consists in creating distractions that take away the attention of the target from the core.
  - *Building cardboard ordnance and displaying it.*
- REPACKAGING consists in modifying attributes of the core so that it is taken for something else.
  - *Simulating highly visible, terminal damage to military equipment.*
  - *Copying the appearance of an enemy weapon.*
- DAZZLING consists in creating confusion, so that identification of the core is made difficult.
  - *Filling the area with smoke, so as to hinder reconnaissance.*