

Techno-Identity, Spring 2005

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Assignment #1

### **Part 1**

#### **Why are there deceptive signals? Why are they a problem – and, to whom?**

Deceptive signals exist because they can benefit those who give them off. An animal that deceptively signals that it possesses some quality, that in fact, it does not possess, may be able to fool a predator or an attacker, and thus save its own life. For example, a particular species of bug that is very tasty to its predators may change its appearance to resemble others bugs which are poisonous to this particular type of predator. By giving this deceptive signal, the tasty bug can fool the predator into thinking that it is poisonous, and thus avoid being eaten.

Depending on the rate of deception, deceptive signals can present problems to either the receivers of the signal, or to the signalers themselves. In this example, the deceptive signal is initially a problem to the predators (the receivers of the signal), because even when the predators encounter tasty bugs, they will not pursue these bugs because they are under the misconception that these bugs are poisonous. Therefore, they miss out on the opportunity for a tasty meal.

However, if more and more of the tasty bugs start to adopt this deceptive appearance, the predators may eventually realize that this particular appearance has, in fact, become a more reliable signal for tasty bugs, rather than for poisonous bugs. In other words, if the rate of deception becomes high enough, the signal can actually reverse its initial meaning. Now the deceptive signals are a problem for the signalers, who risk a greater chance of being eaten. Interestingly, the deceptive signals also become a problem for the honest signalers - the bugs who are actually poisonous and use their appearance to convey that. Now that the high rate of deception has changed the meaning of the signal, the bugs that are actually poisonous are also at a greater risk of being eaten.

### **How reliable must a signal be for a signaling system to function? 100%? 51%?**

A signal must be reliable most of the time, for a signaling system to function. If a signal is found to be mostly unreliable, it will cease to have meaning, and thus, cease to function as a signal of a quality. A signal that is only reliable 51% of the time is not reliable enough to result in a functioning signaling system. But on the other extreme, a signal that is 100% reliable is extremely unlikely to exist; honest signaling systems are always prone to corruption by cheaters who will give off unreliable signals to their own advantage. The receivers, who must pay the cost of assessing the signals, will keep the cheaters in check, because the receivers will learn to no longer respond favorably to the dishonest signals made by cheaters if the incidence of cheating becomes high enough. Thus, with this in mind, it is probably fair to guess that a signaling system must be 75%-90% reliable to function.

### **How do signals become correlated with a quality? What happens when the signaler and receiver interpret the signal differently?**

Signals often become correlated with qualities when there is a necessary relationship between the quality itself and the display of the signal. For example, if an animal wishes to demonstrate that it possesses the qualities of great energy and strength, it may do so by displaying its ability to jump very high for a long period of time. An animal who did not have such strength and energy would not be able to accomplish such a feat in the first place; such a signal is not able to be faked and therefore, necessarily reliable.

Signals can also become associated with qualities through convention. For example, in some occupations, it is conventional to wear a suit to work. Thus, wearing a suit may be a signal of having a certain type of job. However, there is no necessary relationship between wearing a suit and having a certain job; a fast food restaurant employee might also choose to wear a suit. But because wearing a suit to work is most often associated with having a certain type of white-collar corporate employment, the signal of wearing a suit becomes correlated with the quality of having this type of job.

When the signaler and the receiver of the signal interpret the signal differently, a miscommunication can occur. For example, if a person sees someone wearing a suit in a fast food restaurant, he or she will probably assume that the person wearing the suit is a customer of the restaurant, rather than an employee of the restaurant. This could lead to confusion if the suit-wearer approaches the receiver of the signal and asks if he or she needs to be helped.

## **Part 2**

An example of an assessment signal in human society is going to the gym to demonstrate athleticism and fitness. The signal (working out at the gym) is related to the quality (one's level of athleticism) because working out at the gym will contribute to and be a demonstration of an individual's personal fitness level. The signal is costly, because a workout at the gym takes time, and also may cause physical exhaustion and muscular pain. The signal is not necessarily 100% reliable – an unfit or unathletic person may go to the gym, perhaps in an effort to feign athleticism. However, a person cannot be deemed to be athletic simply by virtue of being at the gym. But based on one's performance at the gym, it is possible to assess that individual's level of fitness. If the gym-goer is gasping for breath after only a few minutes on the treadmill, it is reasonable to assume that he or she is not very fit. Thus, in most cases, working out at the gym is a reliable assessment signal of level of fitness.

An example of a conventional signal is wearing athletic shoes and clothing to demonstrate athleticism. The signal is related to the quality because athletic people frequently wear active-wear (shorts, t-shirt, sweat pants, sneakers) in order to exercise. Thus, if one wears this type of clothing, it is often assumed that this person is either planning to exercise, or has already exercised. But the signal is not necessarily related to the quality – some people may just wear this type of clothing because they like it, and have no intention of exercising. This signal may be made deceptively, to attempt to fool a receiver into inaccurately interpreting one's level of athleticism, although (to my knowledge) this is not a widespread convention. There is no sanction against this type of conventional signal.

The costs to the receiver in assessing the first signal tend to be a bit higher, because the receiver must watch the signaler perform at the gym in order to have an accurate idea of the signaler's level of fitness, as demonstrated by the length/quality of the workout. The receiver pays costs in terms of time spent watching. The costs to the receiver in assessing the conventional signal are lower; the receiver must simply see a person wearing athletic clothing to assume s/he is athletic, but does not have to spend time watching the signaler beyond that. However, because of this, the signal is less reliable – unless the receiver does spend time watching the signaler, the receiver will not learn if the signaler actually wore athletic clothing to exercise, or just wore athletic clothing because it was comfortable.

The signal can definitely be ambiguous. In the first case of the assessment signal, the signaler may not care whether anyone else regards him/her as fit. He or she may be at the gym simply for personal well-being, without trying to make an impression on any particular receivers. In the second case of the conventional signal, the signal can also be ambiguous. It may be that all the signaler's clothing was dirty, except for the athletic outfit, and the signaler does not intend to fool anybody into thinking that s/he is athletic by wearing that outfit, but is simply wearing it because it happened to be clean.