As described by Paul Chance:

Indeed, learning may be thought of as the crowning achievement of evolution. It is an evolved mechanism for coping with the challenges of a changing environment.

... Learning is a different sort of mechanism from the inherited behaviour we have been considering. Learning does not give the species the tendency to behave in a certain way in a particular situation; rather, it gives the individual the tendency to modify its behaviour to suit a situation. It is evolved flexibility. Only learning enables the individual to adapt to rapidly changing conditions. (Learning and Behavior, 1999, p.19)

The Natural Science Approach

Learning has been a subject of interest for millennia but it is only during the last 100 years that it has been studied using a natural science approach by behaviour scientists, often called behaviourists or behaviour analysts. As with other natural scientists such as paleontologists, astronomers and biologists, the challenge for behaviourists is to explain phenomena by identifying the physical events that produce it. The phenomena that behaviour scientists work to explain are learning and behaviour.

The natural science of behaviour has identified many of the common processes at work that explain how animals behave. Although complex laws of behaviour continue to be investigated, a fundamental set of learning principles emerged decades ago which have stood the test of verifiability and utility with hundreds of species of animals in a wide variety of settings. Thus, while animals are genetically prepared to perform some behaviours and not others, the science of behaviour has shown that the underlying processes by which each animal learns to perform these behaviours are the same.

For example, birds are genetically prepared to fly and cheetahs to run; however, in all cases, it is the experience of performing the behaviour that ultimately predicts how it will be performed next time, if at all. This is called the law of effect, often stated as behaviour is a function of its consequences. It is one of the most fundamental of all the principles of behaviour. In other words, animals tend to repeat behaviours which result in desired outcomes. Of course, the determinism of what is desired belongs exclusively to each animal and may change from one circumstance to another.

Parrots Too

For lack of knowledge about the fundamental principles of learning, many people are utterly baffled by their parrots' behaviour. They describe their birds as inscrutable creatures who behave in completely unfamiliar and unpredictable ways. However, the more one knows about the science of behaviour the more familiar parrot behaviour will turn out to be. Let us apply just this one principle we have discussed, the law of effect, and see how it improves your ability to understand and predict parrot behaviour. To this end, I introduce to you my favourite fictitious parrot caretaker Grace and her popular parrot Periwinkle. Notice the when-then relationship between each behaviour and the resulting consequences which highlights the functional relationship between behaviour and consequences.

1. When Peri steps onto Grace's hand then she returns him to his cage.
   Predicted future behaviour (PFB): Peri, who would rather be on top of his cage than locked inside it, will step off Grace's hand less often.

2. When Peri bites Grace's hand then she puts down the phone and turns her attention back to Peri.
   PFB: Peri will bite Grace's hand more often when she is on the phone.

3. When Peri whistles and chatters softly in his cage in the bird-room then Grace stays busy in the kitchen.
   PFB: Peri will whistle and chatter softly less often when Grace is out of sight.

4. When Peri uses his voice loudly then Grace comes into his room.
   PFB: Peri will use his voice loudly more often to get Grace to come into his room.

In this light, Peri is not inscrutable after all. Although some people might label Peri dominant for refusing to step up, hormonal for biting, or obsessive for preservative shaping, our analyses suggest that Peri would be more accurately labeled an intelligent learner (with an unerring teacher in Grace). Our predictions of Peri's future behaviour based on the sound application of the law of effect are not only reasonable but useful, as well: Each analysis reveals a clear direction for teaching strategies to help both Grace and Peri interact in ways more facilitative of successful companion behaviour. These are very simple examples which nonetheless represent some of the most common problem behaviours reported by companion parrot caretakers. More complex interactions can be broken down in much the same way.

There are many other important principles of behaviour to improve your understanding and ability to predict and influence parrot behaviour. Some of the principles clarify the function of individuality among learners, timing, consistency and intensity of the outcome in relation to behaviour; others clarify the function of dependency between behaviour and outcomes; and, still others have to do not with the consequences of behaviour but the events that set the occasion for the behaviour to occur in the first place, known as antecedents. It is essential to have this knowledge close at hand when working with parrots, or any other living creature. In my opinion, the fundamental principles of behaviour should be part of every grade school science curriculum.

Teaching Strategies

For companion parrot caretakers, aviculturists, and conservationists alike, one of the most important benefits of learning about learning is what this information teaches us about teaching. Understanding the fundamental principles of learning provides us with a core of invaluable strategies with which to teach parrots to live successfully among humans.

There are many well-validated teaching strategies that have resulted from the science of behaviour; however, in my opinion, the most significant contribution is the evidence that everything that needs to be learned can be taught without the use of physical force or coercion. To become proficient at teaching with exclusively non-forceful methods, one only needs to learn how. Strategies such as positive reinforcement, shaping, chaining, differential reinforcement of alternative behaviours, time-out from positive reinforcement, and extinction will provide you with the best methods the technology of teaching has to offer. Learning to use these tools effectively will take time, effort and an unwavering commitment to verifiable data as there are many ways to misuse these tools than to use them correctly. However, the return on these skills once mastered will be well worth the investment.

Let’s look back at our simple when-then examples of Grace and Periwinkle’s interactions to see how we might use some of these tools to teach different behaviours by strategically changing the outcomes.

1. Positive reinforcement: When Peri steps onto Grace’s hand then she talks to him and rubs his head feathers before returning Peri to his cage.
Youth parrots, such as these Blue and Gold macaws, must be trained using only positive reinforcement. Photo: Rosemary Low

Young parrots, such as these Blue and Gold macaws, must be trained using only positive reinforcement. Photo: Rosemary Low

Many people are baffled by the behaviour of their parrots, such as these young Senegals (Poicephalus senegalus)