CUES and SENSORY FEEDBACK

Mark Surtees

When experienced casters cast, the choices made about how we are going to move are determined by various factors. Our position relative to the objective, usually a fish. By the environment we are experiencing, (terrain underfoot, trees, bushes, weather conditions, water conditions etc). By the characteristics of the equipment we are using and lastly by our physiological capacity to control the input elements of the cast. Secondary to these primary influences, we react to continual changes in environmental stimuli, a shift in wind direction or changing position of the fish perhaps, by making micro adjustments to our casting strokes to account for it.

This is sensory feedback at work. Usually we won't waste a moment giving any thought as to how we must move a hand from here to there or how much more or how much less force we have to apply to the rod to do it. We don't think about what we have to do to get tip path x or y, we just do it. When we are able to respond to stimuli quickly like this without "thinking" it is called Implicit behaviour. It is smooth and fast, automatic, autonomic or intuitive.

If you're not so hot with the rod then it's quite likely you will exhibit some Explicit behaviour. Compared to near instant, almost reflexive responses, explicit behaviours are relatively slow and often disjointed. When we have a task that is new or complex we have to think carefully about what we are going to do both before, and while, we do it. Very commonly this causes discontinuities in the process as we stop for fractions of seconds to consider what comes next. We goof up frequently, get frustrated and irritable, confidence and motivation drops. Explicit behaviour like this is an expected and necessary step in the learning process.

As instructors this is the space in which we do most of our detailed work, the "associative" stage. We're trying to smooth out those discontinuities caused as casters deliberate the possible consequences of their actions.

A lesson is an opportunity for an instructor to create an environment where the critical stimuli are controlled. Obviously we can't control the weather but almost everything else can be managed to our advantage. If we do this carefully, we can keep motivation high and promote more intuitive reactions.

Sensory Cues

A sensory cue is one linked to the five senses, sight, sound, touch, smell and taste. Something that offers a stimulus or sensory feedback that a caster can independently use to assess whether they need to make a change in motion…or not. Whether used directly or discreetly, cues will stimulate predictable responses. So, if you want your caster to do it, you're going to have to cue it.

Sensory cues can be divided in to two basic types.

1. Externally focused cues

   An external cue is used when a student is asked to concentrate on the *effect* of a body movement. "This is what happens when you do this".

   For us, most external cues are visual, to observe a loop shape or a line layout for example. To move a glass of water without spilling it or fluff proximity to a target, even a smile. It may occasionally be auditory, the whoosh, or not, of a rod, the sound of an encouraging word. Analogies, much loved by instructors are external cues.

   They are outcome-centric and outward facing.

2. Internally focused cues

   An internal cue is used when a student is asked to concentrate on affecting change to a particular part of the body. We see this kind of cueing when instructors focus attention on the wrist when trying to deal with excessive rod rotation or elbow positioning during a casting stroke.

   They are body-centric and inward facing.

Research has shown that they operate in a hierarchy.

"An external focus is not only more effective for performance and learning, compared to an internal focus, but also results in greater movement economy. That is, an external focus appears to speed the learning process so that a higher skill level is achieved sooner"

This is enough to tell us that, wherever possible, our cues should focus on outcomes, the results of motions rather than the movement of joints, limbs,

hands or even feet that are making them. Once again, extensive research has shown that internal focus on a particular body part is more likely to produce discontinuities in explicit behaviours. One bizarre effect of this is that, sometimes, the more we concentrate attention on a wrist for example, the less control the caster is able to exhibit over it.

A cue should offer a mechanism for a caster to self-assess whether they have achieved an objective or not. When you are setting cues, they must always be portable, something that a caster can learn to react to whether you are there or not. This is because during practice with an effective cue, casters will self-optimise.

Self -optimisation

Given a sensory cue or objective we will all, beginners and experts alike, optimise our behaviours accordingly. In the first example above, experts use multiple, co-occurring, environmental stimuli as cues to optimise behaviour, if we hit a bush we shorten line and go again. (If we are instructors we will also look about to make sure nobody saw.)

Self-optimisation is a concept often misunderstood. It does not mean that beginners will eventually miraculously self-discover a hump mend or a double haul or that instructor input is unimportant or unnecessary. It means that, given a creative cue and appropriate support from an instructor, a caster will make incremental adjustments on their cast until they meet their objective without too much further intervention. (Observing a simple cross body drill where the caster is asked to produce a loop which doesn't fully unroll should be sufficient to demonstrate this effect.)

This is implicit behaviour trying to get out and it pays us to encourage it. Even though the caster may exhibit explicit behaviours in the process, they will learn implicit behaviours faster by working on it and controlling it for themselves.

Be aware also that it is quite possible to produce desirable outputs very quickly with a high intervention strategy…(a very attractive option for instructors but which often creates a false sense of success for learners). Fast is not necessarily better. In fact, although it takes a bit longer and quite a bit of restraint on the part of the instructor, transfer to implicit behaviour is often

more effectively achieved by a lower-intervention, cued strategy because this encourages greater engagement in learning by maximising self-optimisation.

When we teach, it is very easy to assume, that because a learner can produce tidy output under intense supervision, our work is complete. In fact, our aim is to help a caster close the time it takes to move between casting in a cognitive, explicit way to casting in an autonomic, implicit way. This is more than someone being able to perform when we coach, it's ensuring they are able to perform when we don't coach.

Finding a "student appropriate" cue.

As a basic rule, the further along the learning continuum a caster is, the more likely they are to be able to tolerate internal cueing. In some contexts internal cueing is unavoidable, even desirable, setting stances for example. It's worth noting, however, that, given a choice, it is usually less effective than its external relation.

Complex motor skills like casts can be, and often are, broken down into bite-sized pieces for explanation and demonstration. A pick up and laydown for example can be described as a lift, a casting stroke, a pause, a casting stroke and a lay down.

Each part can be vested with purpose, to lift the line from the water, to form a loop, to allow the loop to unroll, etc. This affords an instructor the opportunity to observe and question, "did it form a loop ?" "what shape was the loop?" "how might we change the shape of the loop?" etc. The loop in this way becomes an objective.

For casters who have learned to look, a loop can be a useful cue. The drawback is that it is mobile and transient and they are not always in the best position to observe it. Because casters are operating in that explicit learning space, they're often thinking too hard about making it to actually watch it once it appears. Consequently, it may not be an effective cue for someone earlier on the learning continuum. Here we must find a cue with a bit more permanence, leader layout perhaps, "is the leader straight?" "what can we do to get a straighter leader?", "can you make the leader pile?", etc.

The implications of this for an instructor are quite simple. You must link a sensory cue to the motion you are trying to teach. The cue must reflect the learner's capacity to sense it and react to it. If you can't make a useful sensory cue from your concept or idea, then dump it, because, for motor skills, a functioning cue is way more important for your learner than understanding the abstract idea.

If you do this your lesson will have a greater focus on objective achievement, it will be de-cluttered and therefore much easier both for you to deliver and your learner to understand.

Finally, your words and physiological responses in reaction to a caster's performance are critical to promoting, reinforcing or even preventing, long term change. During a lesson you too are a cue.

Next, Priming.