Backward Chaining as a Method of Teaching and Error Correction in Fencing

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Fifteen years after my last fencing lesson with my first coach he is still teaching me things. I recently read his book Shadow World by DeWitt Tash, in which he recounts the time he spent working at an institution called the Belchertown State School. In it he mentions a teaching method used by occupational therapists called backward chaining. The therapist would teach a multi-step process such as shoe-tying by having the student learn and practice the last step first, and then gradually adding and practicing from previous steps forward. So, for example, in a 5 step process, the student first learns and practices step 5. Then 4 and 5. Then 3 and 4 and 5, etc. until the whole process can be done from step 1 through step 5 smoothly.

Why, in almost 25 years of fencing, had I not heard or read about this before? After a little while on Google, I found some articles about backward chaining in relation to occupational therapy and I did find one good article from 1982 that was about applying this method to the teaching of a golf swing, (see below) but little if anything else concerning its application to coaching sports. Over the years I have applied aspects of this method in my coaching, but I wasn't aware of it as a formal and studied teaching method, and I certainly never put much thought into it. Lately though, I have been thinking about it a lot and experimenting with it at my club, and I think you should as well.

Two examples:

1) I was giving an epee lesson recently and my student had a little trouble making a sequence of actions that ended in a riposte from the parry 1 position. (Coach invites by lowering his point to expose the thumb - Student attacks thumb with simple direct attack with lunge. - Coach makes parry 6 and simple direct riposte with opposition to the student's high inside line. - Student recovers forward, makes yielding parry of 1 while turning his body, then makes riposte to coach's flank.) After trying it several times the usual way, slowly progressing through the phrase forward, I decided to go in reverse order. We posed in the final position, that of the successful touch to the flank. We ensured that the body position was good and that the student felt like he could replicate that position easily enough. Then I had him stay in that body position, but just move is arm from the touch to the parry 1 position, and then make the riposte. He repeated just that action many times. For me, that wasn't exactly a new teaching method. I, and I'm sure many of you have done this too. But then we continued, slowly adding stages of the phrase, until we made our way back to the starting point, the initial cue from the coach. Once that was done, we went back to doing it forward, and he was able to produce the entire phrase much more easily than he had before. Since then I've occasionally employed backward chaining for things like feint attacks, second intention phrases, etc. all with success.

2) I have a student at the club who needed some help improving his extension. His thrusts, his attacks, counter- attacks, and ripostes all looked like punches. He also had some related issues with distance awareness. I figured that I could apply backward chaining to a single tempo action in this case because even though it was only one motion, it had varying degrees of completion leading up to a final end point. Together we went to a wall-target and I showed him what I wanted him to do. He was to start at thrust distance with his body in the on-guard position and his arm fully extended with his tip on the target and the blade gently bent. The next step was to slightly bend his elbow to bring the tip just one inch off the target and be in a mostly extended position, and from there make the last 1% of the extension to produce the touch. After many repetitions of that, he was to bend the elbow a bit more to make the last 5% of the thrust, and with many repetitions would practice more and more of the thrust,

until he made his way back to being able to produce a smooth thrust from an on-guard position with a bent arm. Having seen success with this over the course of a few sessions of practice, he did the same with a simple direct attack with a lunge. He'd start in a good lunge position with is tip on the target. His second stage of practice was a 90% lunch position, with his legs apart, front heel on the floor, and arm mostly extended, where he'd practice just the final portion of the lunge where the tip hits the target and the front toes come to the floor with the front knee bent and above his ankle. The next stages started from positions where he'd make short lunges from guard positions where his feet would be very far apart, and eventually working to longer lunges with his feet closer together, starting in a more traditional guard position underneath his shoulders. Success, at least temporary success, was achieved, and now we are working on making his improvements permanent.

Thoughts:

      I think that backward chaining can be a useful tool for fencing coaches. Other methods of instruction are valuable and do work, of course, and I am not suggesting that they be forgotten in favor of backward chaining. Backward chaining may be a more effective way of teaching fencing phrases though, and there may be situations in which backward chaining may be the best way to help a student having a particularly difficult time when other methods are not producing desired results. The biggest advantage, I think, is that it creates a situation in which the fencing phrase or action is built upon a foundation of success (good positioning and technique) and reward (the touch). As small stages are added, it is difficult for the student to make a technical error, because he is being pulled toward to an endpoint that is well executed. Instead of small errors building up, small errors are erased as the student moves through the phrase because the later stages have the most practice and are fixed with good technique. Conversely, a student who is learning to lunge who starts the action with a technical error (leaning in with the upper body prior to extending the arm and kicking the foot, for instance) will have that error propagate through the entire action and ruin the whole lunge.

      I also like backward chaining because it allows for a smooth and continuous transition from tempo to tempo throughout the phrase being practiced which leads to the touch. Forward progressing learning often requires the student to pause between tempi, or even stop entirely when he has reached the limit of his knowledge of the phrase. Imagine teaching a student how to react with a feint to an opponent who creates an opening while making a retreat. The goals here are to react in tempo and to coordinate the hand and the foot. The student makes a partial extension with an advance, threatening the opening line, and then pauses. In a real bout, there is a big difference between reading the opponent in order to evade the parry and simply stopping all your action. By using backward chaining, there is never artificial pausing between motions because the new action being learned is followed by a well practiced phrase. It works.

      In "Teaching Backwards - An Alternative Skill Instruction Progression, " the author suggests that the main advantage of backward chaining is that the learning of a new step in the sequence does not interfere with the previously learned material. (If the new material were the last stage, the student would be worried about the last stage while executing earlier stages, thus producing stress, anxiety, and error.) I think his point is valid, and recommend you read the article. If you go back to the table of contents for the website you can find other articles relevant to coaching, including a few more articles about backward chaining. http://coachsci.sdsu.edu/csa/vol31/table.htm

I invite anyone with experience using backward chaining to contact me at paul.sise@pioneerfencing.com

Shadow World - A Factual Account of Daily Living Within an Institution for the Mentally Retarded
Tash, DeWitt. Gnosis Publications Springfield, MA USA 2013

http://www.amazon.com/Shadow-World-Revised-DeWitt-Tash/dp/1491067969/ref=sr_1_1?
ie=UTF8&qid=1432654488&sr=8-1&keywords=shadow+world%2C+dewitt+tash

"Teaching Backwards - An Alternative Skill Instruction Progression "
[Modified version of Rushall, B. S., & Ford, D. (1982). Teaching backwards - An alternate skill instruction progression. *CAHPER Journal, 48(5),* 16-20.]

http://coachsci.sdsu.edu/csa/vol31/fordgolf.htm