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Gym-skill technique as a situated and distributed cognitive scaffolding process

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Introduction

Technical and tactical skill development, part of the core craft skills of sports coaches, confer physical body techniques to a central role in professional cultures of sports. The optimal body placements for motor-skill execution (Durand et al., 2005), which coaches teach their athletes in order to optimize their performance, carry a degree of ambiguity in gymnastics culture. Indeed, the movement, as scored by a panel of judges, is both method/vector and result/outcome of the performance. This ambiguity is ingrained by the contents of the reference guides written and published for coaches by the governing body for gymnastics in France (the *Fédération Française de Gymnastique*), and which tend to confine performance to behavioural expressions (Hauw, 2009).

The spatial and temporal descriptions of the gym skill techniques, erring between canonical forms and analytical movement-by-movement breakdowns into kinematic storyboards and schematized representations and the processes that make them, ultimately constitute commoditized reification, or what Garassino (1980) deplored as an “abusive substantialization” of the gymnast’s art. By only shedding light on the output expected from teaching–learning interactions, these theory-heavy rationalizations narrow teaching down to simply closing the performance gap to objectivized behavioural models and narrow the gymnast’s art down to reproducing the most efficient and effective movements. Left in the dark are all the constitutive processes, the organic work (Garassino’s (1980) “*travail vivant*”) behind the scenes, all the input it takes to slowly learn the techniques that make this output, and in conjunction, the tacit knowledge and intuitive perceptions mobilized by the gymnasts and their coaches alike. The disciplinary inscription of the study in cognitive anthropology advocates a move away from these naturalism-first characterizations of gym skill techniques towards a more comprehensive human-enactive approach, to uncover how, in actual situational intervention, coaches read meaning into gymnasts’ successively attempted moves on the apparatus. This “activity-first” postulate (Durand et al., 2005; Hauw, 2009) offers the opportunity, through its ground theory and methodology frame, to characterize the gym skill techniques as pedagogical content knowledge (Shulman, 1987). It’s a question of capturing and describing the micro-temporal cognitive processes manifested by expert artistic gymnastics coaches as they enact interventions to guide gymnast learning. The enaction paradigm (Varela, 1989) considers the experiential and embodied dimension of cognition, which it characterizes as a relational feedback process emerging from the interaction between an actor and the environment it selectively creates, and the world of meanings it generates.

Method

In order to document the dynamics of coaching activity praxis engaged when observing the moves being performed and regulating the gymnasts’ executions, we employed Vermersch’s explicitation interviewing technique to elicit verbalizations of the coaches’ reflective experience (Vermersch, 1994) and cross-matched this experience to the observable praxis engaged in these adaptive adjustments. The material data collected was analysed through a qualitative inductive analysis process using the constant comparative method (Glaser and Strauss, 1992).

Results

Engaged in an activity to guide perfect execution of gym skills by gymnasts aspiring to join the elite, the coaches—considered experts by the gymnastics community—discretize gymnastic movement into units or sequences that their teaching experience has taught them to recognize as critical to successful execution of the moves. These sequences, which coaches term *placement phases*, constitute coherent systems of properties that are neither stabilized nor stably framed but perpetually densified as the coaches progressively self-learn to problem-solve attempted skill-moves. The properties that emerge, shaped by original and complex situated interventional praxis, the dynamics of the coaching work, do not limit the gymnast's attempted skill-moves to a translation of their physical-figuration dimension (body placement, positions-in-space on the apparatus, motor-skill operations, demonstrations), but also characterize the gymnast's intentionality-in-action (what he is trying to do, see, feel, etc.). These properties, sequenced by a system of cause-effect links, lend the *placement phase* a physical-figuration typicality that frames and organizes the coaches' perceptive skills. They also constitute a fairly dense repertoire of pathways for original as-seen situated intervention geared to bringing about the expected transformations and, ultimately, potentiate longer-term progress. This is because when they act on one property, the coaches aim to co-optimize the other properties, the target phase, and the all-round skill being worked on. The phase, like its defining metonymic properties, thus constitutes a simplex syncretic unit of action scaffolding possibilities for coach-practitioner co-action.

Discussion

These findings recast gym-skill technique as an enactive cognitive process that is forged by and for the activity of gymnastics skills coaching, and that is situated and distributed between the protagonists and the environment and material structures, being embedded in the coach-gymnast dyad through learning-in-action on the apparatus. Gym-skill technique is also embodied, with coaches perceiving speeds, accelerations, body tensions, intensities of action, etc., all based on their own situational experiences of sensorimotor capacities. Here, marking a break away from an inert perspective of technique argued by theoretical formalizations in the scholarship which tends to typecast the gym-skill technique as static body-shape configurations, the results prompt a recast of technique as deeply embedded in human praxis—both “anthropologically constitutive” and “constitutional” (Steiner, 2010) due to the way it potentiates new knowledge-sets as resources tied to the intervention setting.

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