NEW VOICES

Brains in their feet?

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> You cannot be a great player without being intelligent. In one second you have to imagine lots of possibilities and decide immediately where to play the ball. It's like geometry in your head. (Eric Cantona, 2006: see tinyurl.com/6meve36)

If the brain cells of a footballer truly are engaged in things other than fast cars, female pop stars and designer lifestyles, then what is it that occupies the cognitive capacity of these millionaire sporting icons? How do players, derided by the media for their lack of intelligence, cushion a ball dropping from the sky and pick out a perfect pass in a split second? Skilled performers are capable of the most extraordinary precision in matching the spatio-temporal demands placed upon them (Williams et al., 1999).

Recently, I was afforded an opportunity that many sports researchers have sought for years, when I worked with Gary Neville and Denis Irwin from Manchester United's treble-winning team of 1999. The players were willing to have their names disclosed in any publications that may arise from the study, to assist in taking sports research to a wider audience.

I talked to the players about the cognitive components of deliberate practice (Ericsson et al., 1993); indirect perception theory in sport (Williams et al., 1999); and the effects that an elite athlete's sport-specific knowledge base (Gould et al., 2002) and game awareness (MacNamara et al., 2010) has on anticipation and decision making in elite-level football.

I conducted a qualitative interview with Neville and Irwin, to ascertain the components of cognitive deliberate practice (Horrocks, in press). Seven key aspects were discovered:

- constructive analysis (Looking at the self in past, present and future and devising the best solution-focused method of operation in the upcoming game);
- deliberate thought arising from past physical experience;
- use of film and deliberate live game studying of upcoming opponents to increase game intelligence;
- visualisation;
- self-driven cognitive engagement to prepare for and to plan individual training and game strategy for upcoming games;
- utilisation of social support from manager, coaches, other players and family; and
- evolutionary engagement, where a player consistently moves with new demands and available technologies and teaching methods as the game progresses and changes through time.

The majority of these findings confirm previous research (e.g. Gould et al., 2002; MacNamara et al., 2010), but finding these components in football is important, given Ericsson's notion that all deliberate practice theory and characteristics should be specific to each domain. Perhaps the most interesting and original theme to emerge from the interviews was that of players' acceptance and commitment to evolutionary knowledge and new technologies being paramount to the maintenance of elite-level performance. As Gary Neville said:

> I would do eye exercises and work on my peripheral vision when the boss brought in Gail Stephenson from Liverpool University, attention to detail, just like stretching your calves or hamstrings.'
>
> I would use the analysts but the video and technology didn't always capture what I would want or need so I would ask for more detail or different angles and perspectives.
>
> From the start of the 2002/3 season Carlos [Queiroz, Coach] would ask us to do things differently, things were changing, the team was evolving and that is what he had been hired to do.

This behaviour concurs clearly with the idea put forward (Ericsson, 2006) that at the highest levels of expert performance, the drive for improvement will always

Gary Neville and Denis Irwin

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involve search and experimentation at the threshold of understanding. Such behaviour is prevalent in those striving to improve to new and undiscovered heights. As the players passed through different developmental stages, they engaged in varying types of cognitive deliberate practice. They became students of and disciples of the game in an educational and constructive manner from very early in their careers. Inevitably, they modelled themselves on existing elite players, with Neville saying:

> I watched our back four regular, I had blinkers on, when I was centre half I would watch Brucey and Pally, when I was full back I would watch Denis.
>
> Eric Harrison used to show us videos of the great Milan team, the way the defence used to play high and catch opponents out, I would study Italian football weekly on Channel 4.

Students of the game

Deliberate practice is the development of both body and mind (Ericsson et al., 1993), and it may be that elite-level performers' enhanced decision-making skills are a product of increased knowledge of the game. My research supports this. Neville and Irwin, and quite possibly all true elite footballers, are far more intelligent and cognitively engaged individuals than we may initially believe. The individuals concerned worked extremely hard and put in a considerable amount of training, and this training did not finish at 12.30 when the ball was put away. To regularly perform in the stadiums of Manchester, Milan, Madrid, Munich and Moscow requires an enormous amount of thought, organisation, concentration, planning and general cognitive processing. This time spent engaging the brain off the field in search of answers on the field appeared to increase as the stakes got higher:

> Concentration I don't believe should ever change for a sportsperson. (Neville)
>
> The minute I got on the plane on a Tuesday morning for an away game in Europe (Wednesday night) I would switch on, that is where game time begins for me 36 hours before you go in, everything must be right, preparation for me is key. (Neville).
>
> I would always visualise my performance the night before, everybody does that don't they? I would hope they do. (Irwin)
>
> It's not just who I'm playing directly against or the man I'm facing. Who serves him the ball? Is it a straight pass? Can they play it 60 yards over your head? Can things be stopped at source? Can our midfielder get tighter? Will it be a physical battle? Is he quick and jinky? Can I talk them off their game? What kind of a person are they? (Neville)
>
> Steve McClaren was a very good coach, we would often have a discussion after a defensive session and clarify everything was right. (Irwin)

It seems that the players were developing skills which allowed them to use their long-term, working memory for situational and online demand (Williams & Ford, 2008). They could encode information rapidly in long-term memory and selectively access this information as required (Lenoir et al., 2007). These skills within such elite-level footballers bypass the customary limitations imposed on traditional short-term working memory. As academics specific to their personal domain, they left no stone unturned; all possible knowledge was gained of both their own role and of their opponents. The interviews supported the importance of situational knowledge, pattern recall and prior knowledge through experience or study (originally described in chess, e.g. De Groot, 1965) in decision making at elite level.

Perspiration or inspiration?

How do my findings sit with current policy surrounding sports development? The notion that deliberate practice – preferably around 10,000 hours – is a more sure route to expert performance than is god-given talent (Ericsson et al., 1993) is becoming increasingly popular in modern society. The FA Premier League and The Football League have recently passed a new elite player performance plan (EPPP) for youth development, largely focused on increasing the hours of coaching for players between the ages of 8 and 21. Although commendable that such change is being considered, the most recent EPPP made available to professional clubs suggests the new system doesn't reflect the constantly evolving game of football, stemming instead from dated research in other sports or domains. Ericsson does warn in later literature that the deliberate practice theory is domain-specific and that the optimal distribution of hours depends upon domain. The amount of daily deliberate practice is even further limited by factors constraining the duration of production of maximal power and strength (Ericsson, 2006). So surely there is a role here for psychology and cognitive deliberate practice? Yet this is wholly overlooked in the new EPPP. Our discipline is a prime facet of research, educational advancement and human development, and therefore its omission appears a strange decision.

How do other countries do it? 'La Cantera' (Barcelona FC Academy) is currently acknowledged to be the world's premier football factory and cites the education and development of the person first and foremost (see tinyurl.com/27t8dj2) as the foundation for its players. They only actually train six hours a week and play one 90-minute game – nowhere near the 'magic' 10,000 hours. The rest of the time is spent in 'La Masia', the house where behaviour and life choices are honed. These young footballers' brains are developing and they are undergoing a cognitive evolution: this is very much a part of the journey to elite performer. Maybe the lifestyle being developed here is similar to that developed by Neville and Irwin.

My research to date has led me to design an educational intervention, the Cognitive Deliberate Practice Cycle, for youth stage development players aged 16 and over (Horrocks, in press). The aim is to teach our younger generation the cognitive domain-specific and lifestyle skills required to be able to operate at the top and to be able to reach this level earlier. Neville (2011) describes it as a 'fight' to get through a youth system, a fight that requires hour upon hour of dedication both in training and off-field in thought process and domain-relative behaviour. As Ericsson states 'these skills are not innate', so let us teach them.

The intervention is currently in testing and is showing remarkable early results in one English Premier League academy. The intervention is also at latter-stage discussions for country-wide roll-outs with two national governing bodies. The work has attracted guidance and collaboration from some of the leading psychologists in the field.

Maybe the final stop in England's quest to be the elite footballing nation lies at the door of psychology and additional domain-specific research.

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Neal Simpson/Empics Sport