Why statistics rule

By Stathi Paxinos
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Brisbane coach Leigh Matthews talks tactics at last year's AFL Grand Final.

It's an image repeated every weekend during the Australian Football League season. A coach runs down from the stands on to the field at quarter time, pulling in his slipstream the team's statisticians and assistant coaches. In the ensuing team huddle, players are drilled with key performance indicators - the hit-outs, the hard-ball gets, the lapses in defence, the critical match-ups.

It's not only AFL coaches who are obsessed by statistics, it's a worldwide phenomenon - for the media, fans, players, team managers and historians - from rugby to soccer, tennis, cricket, Olympic events such as track-and-field and swimming and other sporting codes.

Following the lead of the most ardent US baseball and gridiron supporters, Australians have become obsessed by statistics - the number of uncontested marks in an AFL match, the speed of Andy Roddick's serve, how many Test players have scored a double century at the MCG, the Olympic swimmers who make the fewest strokes in a 50-metre sprint.

Numbers that are trickier, and sometimes more obscure, are tennis stats such as the number of backhand, down-the-line winners hit by right-handed players on the centre court at Wimbledon in a final.

What TV viewers and fans in the stands don't see is the complex web of technology that underpins the collection, processing, distribution and analysis of these statistics.

Gone are the days when professional sporting teams relied on hastily scribbled chalkboards and other manual systems.

For instance, digital video is now married to the raw numbers to give enhanced context, so teams can dissect every play in excruciating detail the week following a match. Statistics are sent over third-generation (3G) high-speed mobile phone networks and to digital pay TV subscribers. Websites update in real-time.

Sport has reached new levels of performance and professionalism, and it has done it with the aid of IT.

Of the 16 AFL teams, 10 have deals with Melbourne-based sports statistics systems provider Prowess Sports, which employs seven staff and five statisticians. Founder Gundars Mantinieks has promoted computerised

analysis since the mid-1980s, when, with basketball coach Lindsay Gaze, he unsuccessfully looked for software to satisfy their statistical needs. Mantinieks went to work on his own software package, but in a sport where clubs traditionally had hoards of volunteer statisticians scratching down every detail with pen and paper for the coaches, there was resistance to the new technology.

"Certainly in the early days it was a very hard sell because sport in general was not very technology literate, and we really went through an education process to a certain degree with a lot of the new technology out there," Mantinieks says.

He says Australia is a world leader in statistical and video analysis - an opinion backed by others in the industry. He claims soccer has a different philosophy and was slower to realise the potential of statistics, although big teams in Britain are experimenting with satellite tracking of their players.

"We've been involved in most sports in some shape or form, and by far and away the AFL is the most advanced in terms of their thinking and analysis of the game," he says. "Some argue it's gone too far in some cases. It is probably the closest it is going to get to the technology or the analysis that is done, say, for gridiron in the US."

Clubs are hush-hush on how much they pay for these statistics, but it is understood that basic packages of stats start at about $1000, rising to "elite" packages that cost from $10,000 to $30,000 a season for each club.

Melbourne-based Champion Data, with six staff and 100 casual game callers and data entry operators, is official supplier to the AFL and clients such as the Hutchison 3, 3G mobile telephone network, to which they also supply European soccer and NRL match information.

Canberra-based Sportsdata, the NRL's official statistics supplier, uses Software AG's Tamino XML database to speed the transmission of a wide variety of stats to consumers, websites and teams such as the NRL's ACT Brumbies and the AFL's Fremantle Dockers. Other suppliers include Namadgi, Cadability and Virtual Spectator (formerly Pineapple Head), which has provided systems for golf and yacht racing.

Statistics supplied by these companies give direction, clues to hidden performance or weaknesses, and sometimes even hope.

Sydney Swans football technology manager Anthony Cahill says the players and coaches have caught up to the computerised video and statistical analysis tools that are at their disposal.

"If we tried to do what we do today five or 10 years ago, the players wouldn't be able to cope with it," Cahill says. "You build up to it, to the point where they seek it out - they want to know more about the game to be successful."

Every week, players from the AFL's Hawthorn Hawks file into the team's Glenferrie Road headquarters in inner-suburban Melbourne. With the team mired at the bottom of the ladder, they turn to the 20-page statistical breakdown of the weekend's game to find clues that might help them improve. The analysis includes the coming round's opponent - so in this respect the next game is fought days before the team steps out on to the grass.

Sam Mitchell, Hawthorn's injured midfielder and last year's national Rising Star winner, believes the printouts hold the 1 per cent edge that can't be gained through extra physical work.

Mitchell says the stats reveal insights into his opponents' styles, such as that of Adelaide Crows captain Mark Ricciuto.

Ricciuto, last year's Brownlow Medal winner, is renowned for his hard play. But it's the statistics that illuminate a little-understood aspect of his game - how often he gets handballs that set the Crows onto an attacking raid.

"Quite often you don't realise how some players get their footy," Mitchell says. "If you are playing on someone and you know he has a certain tendency, like to swing onto his left, it might help you maybe that 5 per cent."

The buzzword among those in the industry is "value-added" statistics - numbers that reveal correlations and patterns in a team's or an individual's play.

"When people say 'did you check the stats?' they are often talking about how many kicks or how many handballs they had," Mitchell says. "But it's not just about that any more. You can actually learn a lot about ball movement and the way yourself and other teams play."

More detailed information will be available in the next decade as GPS and micro-sensors small enough to be worn or inserted under the skin are developed as collection devices to track players.

"I think eventually every player will be tracked and their physical condition will be monitored," says Andrew Moufarrige, Sportsdata's manager. "There will be a camera on every player and everything will be tracked in a game, so there will be nowhere to hide."

Mitchell's equivalent in the NRL, Canterbury Bulldogs front-rower Mark O'Meley, believes that studying statistics gave his game an edge that led to his selection in the NSW state of origin side.

O'Meley, who has been interested in using statistics to improve his game throughout his career, says they highlight weaknesses and patterns in opponents' play that are unlikely to change each week. The prop, who has also played for North Sydney and Northern Eagles, devises his game plan confident he won't face surprises on the field.

Ted Hopkins, Champion Data's football director, says coaches are always "pumping the company for information" to gain an edge. He says 1500 primary events are recorded each game, as well as up to 1000 more "value-added" statistics, such as goal assists, generated by the computer software.

One team, which he would only identify as having "sights on winning a premiership", approached Champion Data to come up with the "six most pertinent measures for midfield excellence" and develop guidelines for performance markers.

Champion Data IT director Darren O'shaughnessy says patterns, or signatures, of players or teams could often only be determined by studying statistics.

"Sometimes when the data hasn't been collected before, it's amazing when you do collect it how it stands out like a sore thumb," O'Shaughnessy says.

Champion Data uses five to six people to cover each game, including a caller, who relays the game over a standard telephone line, and a keyboard operator who inputs the information under the eye of a back-up caller who watches the game from the Champion Data offices. The data is then sent over an internet virtual private network to the customer.

Champion Data uses three separate sets of information - event capture, time-on-ground (which includes the number of interchanges) and game maps - which are merged to produce the final product. This is then pushed from the Oracle 9i database that runs on a Sun Microsystem server running the Solaris operating system to clients such as coaches, commentators, broadcasters AFL internet site, as well as to mobile phones and scoreboards.

"Our boast, and we get this right, is to be able to get the statistic from the keyboard to the coach or commentator in half a second," O'Shaughnessy says.

Each statistic is packed with details such as player identification, where an action happened on the ground, when it happened, and sent in a bundle of less than 100 bytes.

"The idea is that the entire match statistical feed is around 300KB," he says. "It is something that can be downloaded over the telephone line in a minute or two."

The Melbourne Demons were Prowess's first customer, in the late 1980s when the AFL team was under the guidance of coach John Northey. The system was little more sophisticated than a customised keyboard, terminal and basic statistical program.

Prowess callers now go through the game, play by play, using a headset and custom-built voice recognition software to record every detail.

Match statistics are overlaid on a video that is striped with a timecode so they can be called up with the corresponding images in just a couple of mouse clicks. The data and vision is stored digitally on a hard drive hooked up via a 400Mbps FireWire cable and later burned to CD-ROM.

Prowess's Mantinieks says the video analysis picks up 2500 statistics a game.

"In all cases, the challenge is not getting it out but getting it in, so we are always looking for more efficient and cost-effective ways of getting the data in," he says. "Which is why we took the challenge of going down the voice (recognition) path."

The next stage of data entry will be a handheld device similar to a Palm PDA, which will access information wirelessly from a central server.

Mantinieks says during work with the West Indian cricket team, he found captain Brian Lara obsessed with analysing his statistics, while teammates were less enthusiastic.

Also in the "less enthusiastic" bracket were football's volunteer statisticians.

The move to modern statistical analysis has had "probably one of the most significant impacts on coaching in the last number of years," says Essendon football operations manager Dominic Cato.

Essendon uses a statistical program for Apple's Macintosh OS X operating system developed by Sports Code.

"You can track successful teams and look at correlations between why those teams are successful and try to come up with enough similarities to the way they play and what the statistics show (to determine) that it is the way you have to play to win premierships," Cato says.

But he emphasises that despite the added statistical decision-making support, coaching is still an intuitive art form.

The club's manager of football technology operations, Tim Loughran, acts as the statistician in the coaches' box during the game - relaying information from Champion Data's live feed to the coaches and preparing a brief run-down that the coaches absorb as they walk down the race to the ground.

"In the heat of the battle, they still have the presence of mind to be able to decipher what's important and what's not," Loughran says.

Essendon this year has also set up a widescreen television in the coaches' box which duplicates the information on Loughran's terminal screen.

"Often the statistics support what you know intuitively anyway," Cato says.

"You can just see that you are losing or getting smashed in the clearances and then you'll go to the statistics and it will be borne out in the figures.

"There's no doubt that (Essendon coach) Kevin (Sheedy) is a very good intuitive coach but he's also someone who likes to obtain information and more importantly provide that information as feedback to the players as a teaching and a coaching tool."

Supporters in the Bombsight

Four years ago, Essendon looked at the way football clubs interacted with fans and concluded they were the great untapped marketing resource. The club estimated it had a million supporters across the country, but that it had contact details for only a fraction of that potentially red-and-black-clad army.

Commercial operations general manager Mike McKenna wrote a business plan in 2001 to build a database of

the 250,000 fans who would be the target of its direct-marketing campaigns, to overcome what he says was a "pretty flat, pretty mature" income stream.

He says only a very small percentage of fans become members.

The club created a system to funnel every contact with a fan into a database. Clubs could not survive by maintaining "very rudimentary" members' contact databases.

Essendon implemented a system similar to that used by Port Adelaide's AFL franchise, the Power.

The club uses Comet software to produce a secure central marketing and ticketing database that has the details of 180,000 supporters. The 200 GB server is backed up every night using ARCserve, usually a Novell-based product but the club runs it on Windows 2000.

It also uses software such as MOSAIC and Roy Morgan Research's Asteroid, to create consumer profiles and analyse buyer behaviour, to target the direct-marketing campaigns.

McKenna credits the system with doubling the Bombers' junior membership base last year through a direct-marketing campaign.

The club's website is a vital tool to collect data because it is an inexpensive and unobtrusive way for fans to approach the club, he says.

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