Module 1: What is Scouting?

BARÇA INNOVATION HUB
Universitas

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1. What is scouting and what is our understanding of it?

The term *Scouting* is an Anglo-Saxon word that literally means exploring.

Scouting can be defined as the process of recognizing and carefully examining the game of soccer, in order to analyse its functioning or the elements that develop it.

The person who performs the functions that are part of this process of recognition and analysis will be called a *scout* by extension.

In general terms, we can distinguish between two types of *scouting*, each of which has different objectives. On the one hand, these can be carried out in order to analyse the functioning of the collective game (tactical analysis). On the other hand, we can focus on the analysis of the elements that develop it, a process that can be called ***scouting* of players**.

In this course we will focus on the *scouting* of players.

Originally, the *scouting* of players was a process that pursued the search for talented players and was based almost exclusively on the scout's subjectivity. However, as soccer became more competitive, the process improved and tasks began to be incorporated. Nowadays, it is necessary not only to find new talents, but also to evaluate them, monitor them and, finally, determine if they will be suitable for the desired club, according to both subjective and objective data. Therefore, the number of methods to be applied has increased and, consequently, the number of professionals involved in this task as well.

As a result, the process is more scientific, and broader as it takes into account a greater number of performance factors, and aims to combine the quantitative and measurable factors with the interpretative aspects of the observer, that is to say, the *scout*.

The task is quite complex, as observation is based on multiple factors. However, it is not a single aspect that, once detected in the player, guarantees the future performance we are looking for, but rather a balanced observation of different factors that influences future performance in different ways and that, in turn, can have a compensatory effect on each other.

It is important to make a differentiation in the *scouting* of players, which will be developed in more detail throughout this course on *scouting*.

- *Scouting* in elite soccer. Monitoring of "already-trained" players, in order to incorporate them into the first team squad shortly, aiming at immediate or very short-term performance objectives. We observe what the player is capable of developing on the field and his compatibility with how our team plays.

- *Scouting* in training soccer. Monitoring players who are in one of their different stages of training, aiming to incorporate them into our club and complete their training in a specific context. We look at what the player is capable of doing on the field and what we believe he can do after a training process over a period of time, according to our knowledge and experience. This includes medium- and long-term performance objectives.

At any level, *scouting* has become a fundamental aspect of club development. A good *scouting* process can lead the club to perform better in competitions and increase its chances of success. This is an ongoing process and if the club carries it out correctly, it can ensure a continuous process of talent flowing into the club, making the most of its resources and bringing both financial and sporting returns.

Below, you will find a variety of definitions of the term *scouting* provided by renowned professionals that will help you to acquire a more global idea of the concept and its meaning.

To start with, it is accepted that, as Cerquiglini (2008) describes: "*Ce que la nature vous a confié et que vous avez su développer*" (p. 59) (what nature has entrusted to you and what you have been able to develop), talent (in general, not only in the field of sports) is based on genetic background, but you have to develop it yourself. In other words, a proper selection of the player does not guarantee a correct evolution of the athlete. Subsequently, there is a training process that allows the player to develop and improve the skills detected.

Tim Coe, a professional *scout* at Brighton & Hove Albion FC, describes *scouting* as "the identification, evaluation, screening and recommendation of relevant players to help optimize a club's player recruitment in the short, medium and long term" (n/d).

Edgar Moreno, coordinator of grassroots soccer and *Scouting* -Blue & White Millonarios FC-, defines *scouting* as "the process that allows a club to follow and identify players with potential talent, capable of performing at a high level in their activity" (n/d). Richard Allen, a specialist in talent identification at FIFA, defines *scouting* as "the process of identifying and observing players to determine if they have the potential capabilities to play at the required level" (n/d).

Based on all these definitions, we can conclude that scouting is a planned, time-consuming and meticulous process. Throughout the course we will describe this process, highlighting its most relevant aspects.

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2. How the role of the scout and scouting has evolved: historical background

In the field of soccer, the practice of *scouting* dates back to the middle of the 20th century. The importance of soccer in society increased and clubs began to pay more attention to the potential talents for the future.

Some clubs then began to give importance to *scouting*, but they were limited to having someone present at the games who would take basic notes on the most outstanding players and the match, but always in a subjective manner, leaving out any other data.

Naturally, they did not benefit from the technology available today to take their notes and relied on their knowledge of soccer using paper and pencil, while watching the game directly on the field.

Scouting arose due to the increasing competitiveness between clubs, as finding the best talent in a sport so competitive as soccer could make the difference between success and failure.

Another reason was that clubs needed players with specific characteristics to adapt to the changing needs of the game itself.

The globalization of soccer required clubs to have a network of scouts in order to identify and recruit players from different parts of the world, which has been a decisive factor in the development of the *scouting* industry.

Overall, we could state that the development of *scouting* has gone hand in hand, and in parallel, with the increase in the social and economic importance of soccer clubs. Clubs have become macro-structures that function centrally around one figure: the soccer player. Therefore, the clubs are committed to increase the means to make the performance of this protagonist better, more decisive. As business entities seeking maximum efficiency, soccer clubs aim to ensure that relevant aspects are not left to chance, thus, nowadays, they emphasize the scouting processes and provide them with the maximum technical means and specialized human resources.

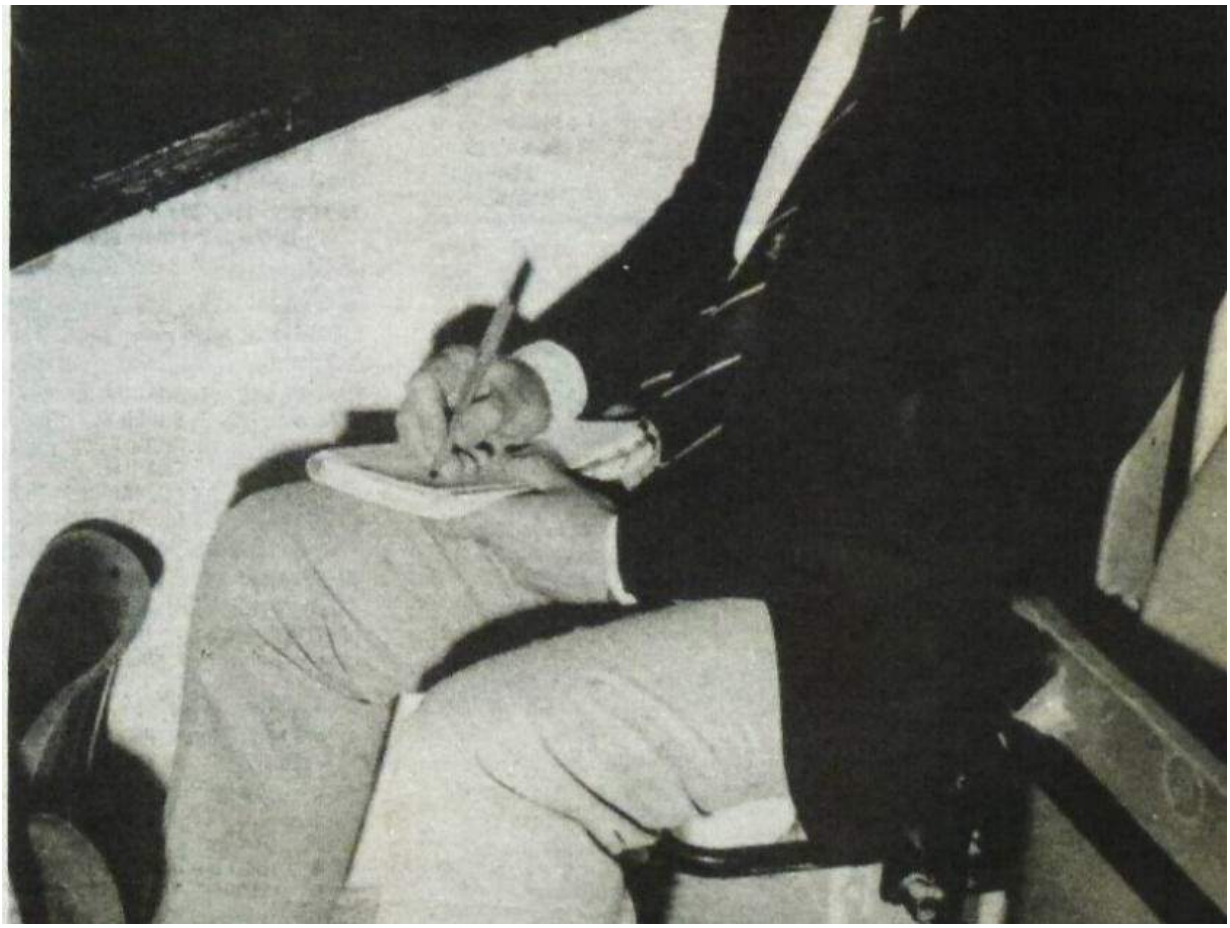
Next, we will discuss how scouting has evolved following different events that have taken place over time.

1950. Handwritten notes on events taking place during the game

Although soccer has been analysed practically since its beginnings, it is during this period (around 1950) that we get the earliest records of

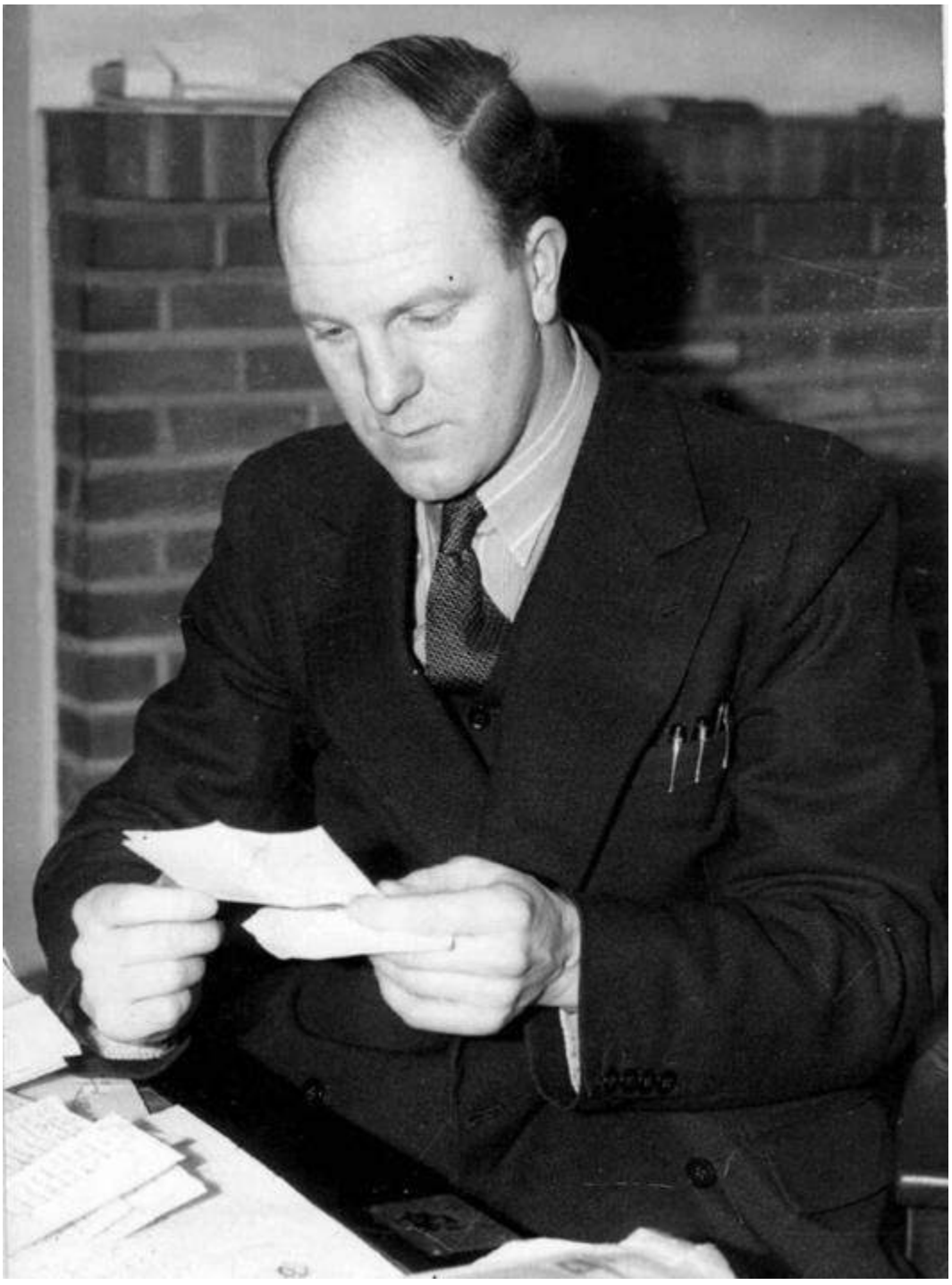
what happened in a soccer match as such, done in a “handmade” way. Games were watched in person and notes were taken in a notebook; information was requested from members of the club's local area to find out details about the opponent. Usually, planning depended only on who the next opponent was, basic aspects of soccer were analysed, such as the way the opponent attacked, the way they defended, and set pieces, whereas, as far as the individual aspects were concerned, the notes limited just to mentioning which players excelled without hardly describing their qualities. These notes were given to the coach of the club and he made decisions based on these records and personal knowledge.

Figure 1: Note taking before the introduction of technology in soccer



Source: Lyons, 2017. https://bit.ly/4f7ztvj

Figure 2: Stan Cullis, coach of Wolverhampton Wanderers from 1948 to 1964.



Source: Martinez Arastey, 2019. https://bit.ly/3VZENZ6

1970. The term *scouting* first appeared as part of the first observation methodologies.

In the 1970s, as interest in soccer grew globally and competition in the sport increased, clubs and teams began to focus on identifying and recruiting players. Over time, more structured approaches to *scouting* emerged involving the systematic observation of players in a variety of contexts, such as league games, youth tournaments and training sessions.

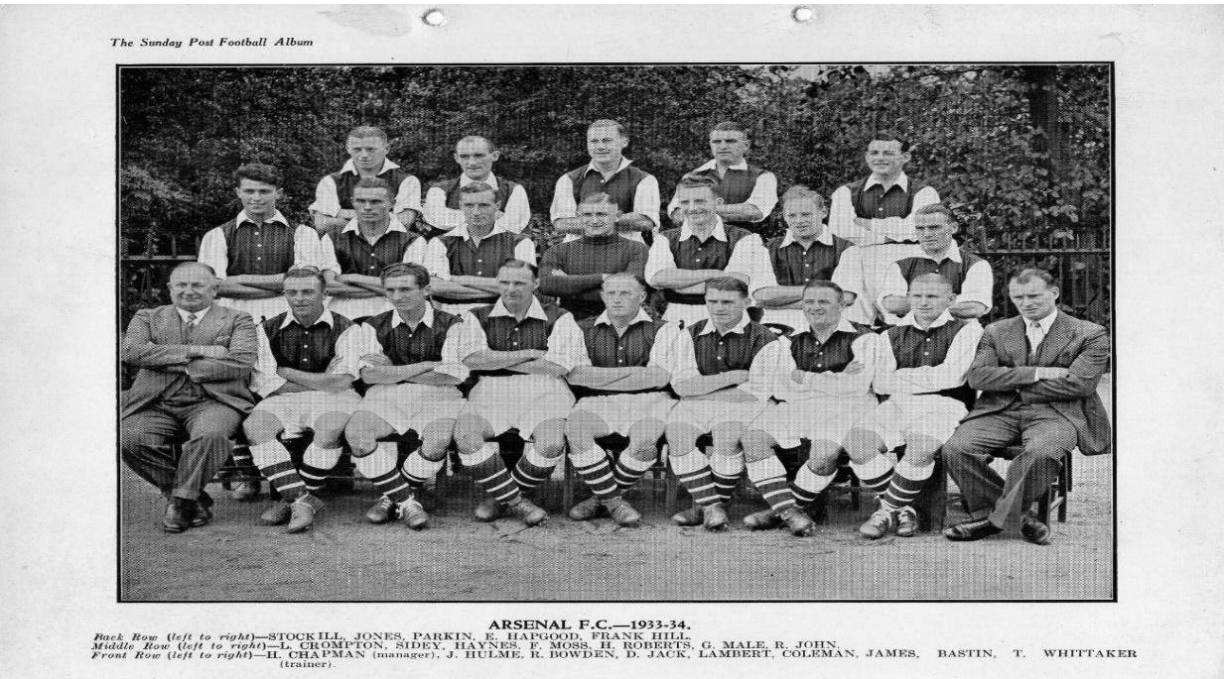
For many people, Thodor Charles Reep was fundamental for the development and evolution of *scouting* in soccer, and is considered the first analyst in the history of professional soccer.

Charles was a war veteran who served in the British Royal Air Force during World War II.

He was born in Plymouth on December 22, 1904 and developed his professional career as a clerk. He was able to develop the mathematical skills that he would later use, combined with his great attention to detail.

A key moment in his career was when he attended a lecture by Charles Jones, legendary captain of Arsenal CF, who spoke about the way his team, then coached by Herbert Chapman, played. Charles was amazed at the principles, described as representative, of the game played by Chapman's team, a team he had seen in person during his time in London.

Figure 3: The 1933 Arsenal CF team featuring Herbert Chapman and Charles Jones



Source: Martinez Arastey, 2019. https://bit.ly/3VZENZ6

Although Reep had no experience as a professional soccer coach or player, he became deeply interested in the game and began to study it from an analytical perspective.

A paper published alongside Dr. Bernard Benjamin in 1968 in the Journal of the Royal Statistical Society, entitled "Skill and Chance in Associate Football," was the first article published in a journal on soccer in history. It was a key event for the future of his career and,

ultimately, for professional scouting, as well as the first step for all subsequent analysts.

Figure 4: This article was published by Dr. Bernard Benjamin and Charles Reep in 1968,
Journal of the Royal Statistical Society

Skill and Chance in Association Football

By C. Reep and B. Benjamin

In association football the ball is passed from player to player among the eleven members of a side until a particular player loses possession of the ball either by interception or tackle on the part of a member of the defending team or by an infringement of the rules of the game or by himself shooting at the defending side's goal. We may define an "r-pass movement" as one in which a player of side A, having just obtained the ball, sets off a series of r successful passes among members of his own team after which there is either a shot at goal by the rth recipient or an infringement or there is an attempted $(r+1)$th pass which is intercepted. We note that a 0-pass movement means that A's first attempted pass is intercepted or that there is a shot at goal without a preceding pass, as, for example, from the penalty spot. There are a number of factors affecting the likelihood of a successful rth pass:

(1) the positions of the players between whom the pass is attempted and the defending players who try to intercept;
(2) the relative skills of the players and the effectiveness and confidence with which those skills are applied at this particular stage of the game.

In evenly matched teams playing under the conditions normally obtaining in good class football (for example, in the first three English F.A. Divisions) the second of these factors does not vary widely from one attempted pass to another but as the attack proceeds the opponents progressively dispose themselves to improve the chance of interception or tackle; they are in more compact formation and closer to the ball. The probability of an r-pass movement $P(r) = [p_1 . p_2 . \ldots . p_j . \ldots . p_r(1-p_{r+1})]$ where $p_1 > p_2 > p_3 \ldots p_r > p_{r+1}$.

As to the form of the function p_r one would expect p_1 to be fairly high though less than unity and p_r to fall rapidly to some low value beyond which there is little further decrease; an exponential form seems likely.

One of us (C. R.), who has an acute interest in the implications for strategic training, has compiled careful records of actual frequencies against which to test this theory. Table 1 shows four observed distributions together with values of p_r derived from these distributions. It will be seen that generally p_r declines as r increases, if somewhat irregularly. At higher values of r when numbers are smaller the observed ratios $\{P(r-1)\}/\{P(r-2)\}$ become irregular and this produces even greater irregularity in p_r.

Investigation of the data suggested that $P(r)$ would be a more convenient parameter to attempt to "smooth" in order to produce a standard model. In contemplating this "smoothing" and the shape of the distribution $P(r)$, it seemed from inspection that one would expect $P(r)$ to fit closely to a negative binomial distribution and this expectation was justified.

Table 2 shows the result of attempting to fit negative binomials to the distributions of Table 1. Generally these are reasonably good fits; the fit for the miscellaneous

Source: [untitled image on article published by Dr. Bernard Benjamin and Charles Reep in 1968, Journal of the Royal Statistical Society]. (n. d.).https://bit.ly/4bN6ABP

During his playing career he worked for Brentford and Wolverhampton Wanderers, where he implemented his methods of statistical and tactical analysis.

His approach was impressive. He divided the field into four sections and established a preferred shooting area in each, about 30 meters from the opposite goal. Each pass and movement was meticulously planned and marked with its own predefined symbology. Later, he deeply meditated on it all. Therefore, carrying out a thorough job could take up to 80 hours.

Also, he collaborated with Charles Hughes at the FA, where he presented his ideas on statistical analysis in soccer and how they could be applied to the development of the game in the country.

Reep was colloquially called a **soccer sicko**. When he died in 2002, it was estimated that he had attended between 2,200 and 2,500 soccer matches in his lifetime, although there are no accurate statistics. He continued to do so until the end of his days, studying them meticulously on his own, without altering his formula.

He was a pioneer in the statistical analysis of soccer and contributed significantly to the development of research methods and tactical analysis of the sport. However, some of his ideas have been the subject of debate and criticism for being too simple and not taking into account other important factors in the game. Nevertheless, his

work marked the beginning of the evolution of tactical analysis in contemporary soccer and its value is significant when contextualized in the period in which he developed his method.

1974. The physical performance of the players is a priority.

During the 1970s, the physical performance of soccer players started to gain attention. Physical fitness was considered more important than other aspects such as technical or tactical skills.

Initial data began to be recorded, and there was a great interest in knowing different metrics such as the distances covered and the players' effort capacity.

One of the first studies was presented by Knowles and Brooke in 1974. It involved recording the movements made by Manchester City's English players during four competitive matches.

The records were handwritten. The observer had to record the player's movements on millimeter paper and then write them on a spreadsheet with an estimate of the real distance to calculate the player's route.

This technique allowed the evaluation of the player's performance in the game, recording the distance covered and the estimated energy

spent, as well as the type of movement, intensity, duration and frequency.

During the World Cup in Germany (1974), Kuhn & Maier (1978) and Jaschok & ITU (1976) carried out different studies regarding the real duration of the match, the interruptions in the game, the number of interruptions, the individual route of the players, the type, number and duration of touches with the ball. These studies highlighted the importance of physical parameters at this time.

Figure 5: Franz Beckenbauer getting ready to defend against Johan Cruyff, 1974 FIFA World Cup Final.

Source: [untitled image of Franz Beckenbauer getting ready to defend against Johan Cruyff, 1974 FIFA World Cup Final]. (n. d.). https://bit.ly/3WsvZfB

The importance given to the physical aspects of the 1974 World Cup was due to several reasons, as we will see below.

- The evolution of soccer: during the 1970s, there were significant changes that were taking place in soccer

in terms of tactics. The transition was taking place from a slow, tactical approach to a more dynamic and physically demanding one. Teams began to give priority to speed, resistance and physical strength as key elements of their strategy to compete globally.

- **Physical preparation improvements**: during this period, there was a great advance in sports science and physical preparation. Teams began using more sophisticated methods to improve players' fitness, such as more intensive and specific training programs to increase speed, strength and resistance.

1987. Analysing the technique. Recording of events such as passes, possessions, and shots

Soccer analysis changed significantly in 1987, as it focused more on technique and the recording of events during matches. These changes involved a greater focus on the strategic and tactical aspects of the game. Specific events such as passes, possessions and shots began to be recorded to improve their understanding of player and team performance.

By focusing on technique analysis, coaches, analysts and teams were able to gain a better understanding of the playing patterns, strengths and weaknesses of their teams and their opponents. Teams began to assess performance more accurately and made more

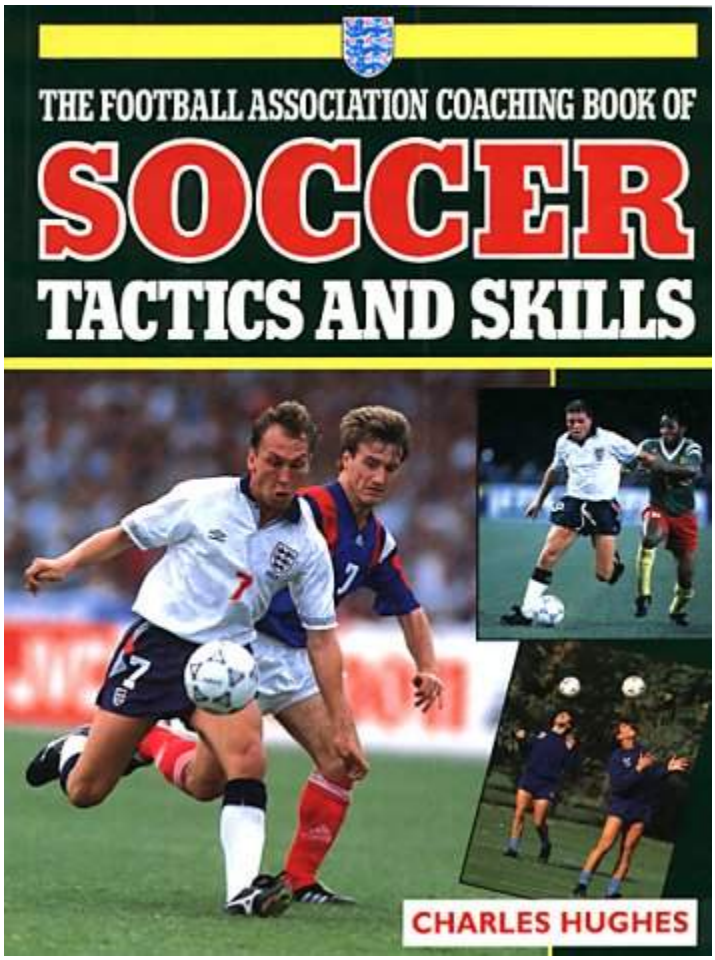
informed tactical decisions based on the information provided by records of events such as pass completions, interceptions, ball possessions and shots on goal.

Over the following decades, these records of events also served as the basis for the development of more complex statistics and more advanced game analysis.

An English coach was key to this change. Charles Hughes was a Football Association (FA) coach, renowned for his focus on improving players' individual technique, as well as his emphasis on the importance of ball control, accurate passing and dribbling skills. He favoured a style of play based on ball possession and precise implementation of technical skills.

Hughes shared his knowledge and experience of soccer technique with coaches through seminars, books and training programs. His methods highlighted that the development of solid technical skills requires constant practice and attention to detail.

Figure 6: F.A. Soccer Tactics Coaching Book - Hughes, Charles



Source: [untitled image on F.A. soccer tactics training book - Hughes, Charles]. (n. d.). https://bit.ly/4bO0hy4

1988. The first computer-based match analysis system, CAMAS, was launched

CAMAS, a computer-assisted match analysis system, brought about a significant change in *scouting*. This *software* was one of the first to use well-known technology in soccer.

The Indian sports scientist Dr. Atul Bansal came up with it in 1988. CAMAS is a *software* system designed to analyse sports matches, especially soccer ones. As it provided detailed statistical analysis and display tools, it helped

coaches, analysts and players gain insight into match dynamics, player performance and strategic analysis.

Scouting benefited because for the first time they had a tool to review and analyse match data to evaluate the performance of their own players and especially those of opposing teams, so that they could monitor them and, in some cases, get to know and be interested in them.

Up to this point, reports were done manually and always performed in real time. When CAMAS came along, they had a tool that allowed them to watch a soccer game many times as necessary. To get a better understanding of what was happening during the game, users could replay and review different moments of the match several times.

1996. The introduction of analytics in soccer. The first company producing data from 22 players

In 1996, the French company Sport-Universal Process developed, together with the French Football Federation, the first system offering the possibility of analysing all the players during the entire match.

AMISCO gathered information on player performance during matches, such as distance travelled, passes completed, and shots on goal, among other things. This data could then be used to make tactical and strategic decisions and analyse individual and team performance.

This was another important factor in scouting, as the system provided detailed information on all players, which made it easier to make decisions when it came to making a transfer.

Figure 7: Screen view of AMISCO, match between France and Norway

Year 2000. New software and the use of computers as the main tool

The use of computers in soccer has increased significantly since 2000, especially for tactical analysis, performance management and strategic decision making.

The introduction of computers in soccer scouting changed the way teams evaluated and selected players. Before the digital era, scouts relied primarily on field observation and written reports to evaluate players. However, computer technology opened new boundaries in data analysis and player tracking.

Teams began using computers extensively to analyse player performance in specific game situations, which allowed them to identify players' strengths and weaknesses more accurately.
Another significant development in scouting was the storage of data on players. There were significant improvements in the organization and

accessibility of player information, although at that time data storage methods were less sophisticated than nowadays.

Computers allowed teams to collect, store and analyse vast amounts of player data, from basic statistics such as goals and assists to more advanced metrics such as distance travelled, speed and passing accuracy. As a result, coaches and managers had a more complete and objective view of a player's performance, which helped them make more informed decisions about transfers and lineups.

Computer programs specialized in player scouting were developed to simplify the collection, organization and analysis of data. It was possible to store player reports, information about their physical characteristics, physical, technical and tactical skills, injury history, among other relevant aspects for player evaluation.

This represented major progress in scouting, as these databases allowed clubs and teams to have access to information on a wide range of players and to compare their skills and statistics.

NOWADAYS Using big data and artificial intelligence applied to soccer

Technology in *scouting* has evolved from manual recording, to video recordings, up to the use of specialized *software* that even allows access to data in real time.

Soccer has been constantly evolving; however, it was always imperative to have as much information as possible in order to take the best decisions regarding the incorporation of new players that add to the value of the teams.

Today, thanks to the development of *big data* and artificial intelligence, soccer teams can make decisions, optimize performance and gain a

competitive advantage on the field due to the vast amount of information available to them.

There are many areas involved in training and *scouting* that have benefited from the use of *big data* and artificial intelligence (AI), such as the ones we will see below.

- **Sport performance analysis**: soccer teams around the world use big data to collect and analyse a large amount of data on player performance during matches and training sessions. They collect data such as distance travelled, speed, passes completed, and shots on goal, among others. AI is used to examine this data and provide detailed information about the individual and collective performance of players.
- ***Scouting* and recruiting:** teams use *big data* and AI to identify and recruit talented players around the world. This requires the analysis of statistical and performance data on young players, as well as the use of artificial intelligence algorithms to predict the potential of players and their adaptation to the way the team plays.
- **Preventing injuries:** *big data* analysis is used to monitor the physical condition of players and prevent injuries. Data collected on workload, heart rate, sleep quality and other factors are analysed using artificial intelligence algorithms to identify patterns that may indicate an increased risk of injury, allowing teams to take preventative measures.

The other area that has improved over time is related to specific *software* for soccer *scouting*. Today, there are several companies that focus on the application of *big data* solutions for teams, clubs, leagues and other sports-related entities, which will be discussed in more detail below.

Artificial intelligence and *machine learning*: artificial intelligence and machine learning are increasingly being used in soccer *scouting*. These technologies can analyse a large amount of data to identify patterns and trends that may go unnoticed by humans. They can also be useful in predicting the potential of a young player or in identifying players with a similar playing style to other successful players.

As we have seen in this course, *scouting* has evolved positively due to technological advances, but they have always evolved together with the *scout*, the human component of the process, that is, the individual who carries out the observation, because, although it is important to have the information, it is even more important to know how to make good use of it. In addition, the scout's opinion is key when making reports, the sensitivity of a trained eye is very important when looking for potential players.

Data analysis can identify patterns and trends in players' performance over time, which can be useful in anticipating their future potential. However, human experience allows scouts to collect this data and better understand the individual needs of each player.

We believe that a scout's trained eye and experience are irreplaceable when it comes to evaluating less quantifiable parameters such as attitude, work ethic, character, and other factors that cannot be fully grasped through quantitative data.

Therefore, the combination of technology and human expertise allows for a more accurate and complete assessment of players. Data can provide objective information about performance in the field, but the interpretation of that data and the assessment of long-term performance potential still depends, to a large extent, on the experience and judgment of the *scout*. The right combination will help *scouting* departments find the ideal player for their club and get closer to success.

The future of *scouting* will be marked by an increasingly tight integration between advanced data analytics and human expertise.

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Self-assessment

1. What are the two main types of scouting in soccer?

- ◯ Coach *scouting* and management scouting.
- ◯ Infrastructure *scouting* and finance *scouting*.
- ◯ Sponsor *scouting* and marketing *scouting*.
- ◯ Fan analysis and media *scouting*.

SUBMIT

1. How has the scouting of players evolved in soccer?

- ◯ It has been simplified and depends exclusively on the intuition of the scout.
- ◯ It has remained the same, focusing only on finding talented players.
- ◯ It has included more tasks such as assessing, monitoring and assessing the suitability of talented players for the club.
- ◯ It has focused only on the objective evaluation of statistics.
- ◯ It has limited the number of professionals involved in the process.

SUBMIT

1. Which is the main objective of scouting in elite soccer?

- ◯ To develop basic skills in young players.
- ◯ To improve the club's facilities.
- ◯ To monitor players already trained for their incorporation into the first team in the short term.
- ◯ To plan events and activities for fans.
- ◯ To assess the performance of trainers.

SUBMIT

1. Which factor drove the emergence of more structured approaches to scouting in soccer during the 1970s?

- ◯ The declining popularity of soccer.
- ◯ The need to improve stadium infrastructure.
- ◯ The reduction of club management costs.
- ◯ The influence of other sports on scouting techniques.
- ◯ The increased global interest in soccer and growing competition.

SUBMIT

1. During the 1970s, there was a breakthrough in sports science and physical training. Teams began using more sophisticated methods to improve players' fitness, such as more intensive and specific training programs to increase speed, strength and resistance.

- True.
- False

SUBMIT

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