The Dynamics of Structure, Social Interaction and Flow

- The Case of Rosenborg Ballklub

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Abstract

Purpose

The purpose of this study is to look into the extraordinary performance of Rosenborg Ballklub (RBK) under coach Nils Arne Eggens' leadership with several appearances in the Champions League, competing with more clubs with more resources.

Design/methodology/ approach

In-depth interviews were conducted with Coach Eggen and four of the key players. In addtion, documents and books covering RBK were also studied and synthesized through a thematic analysis to examine the two forms of qualitative data.

Findings

The study identified six key postulates that could be viewed as a minimal structure that was important for creating a picture of how Rosenborg´s attack play should be carried out. The study identifies a high commitment to the way of playing. Even if the way of playing was well known, the play was carried out with high pace and precision, making it hard for opponents to defend. The play pattern is closely linked to the social interaction. Furthermore, the playing pattern was reproduced repeatedly, creating a platform for collective mastery

Originality/ value

The study provides in-depth insight into the performances of a football team over a long period an see this in light of socio- technical theory, flow theory and social interaction.

The study of Rosenborg Ballklub demonstrates the combinations of individual characters and strength (signature strength) within a collective using a holistic and complementary approach. One should focus on the strength of the team.

Keywords: football, team performance, flow, socio- technical system, social interaction

Introduction

Professional sport teams provide an ideal context and group dynamics and relationships and the impact on performance (Mach, Dolan, & Tzafir, 2010). Football is a complex sport involving a myriad of possibilities when playing the game. “Football players have to react to surprising moves from the opposition and also generate moves that catch opposing players off guard” (Montuori, 2003, p. 240). There is a growing interest in bridging human factors seen in the context of football in enhancing performance (Salmon, Hulme, McLean & Solomon, 2021)

How to perform by a system in a complex environment was early observed by Burns & Stalker (1961) in their classical study. This can also be seen in accordance with socio-technical design (Trist & Bamforth, 1951; Emery & Trist, 1965; Thorsrud, 1968; Cherns, 1976; 1987; Applebaum, 1997; Clegg, 2000). The interaction of social end technical aspects creates properties and conditions for successful or unsuccessful performance (Walker, Stanton, Salmon & Jenkins, 2008; Hulme, McLean & Salmon, 2021). The present study applies a concept from Hedberg, Nystrom & Starbuck (1976) and Barret (1998) of minimal structures allowing maximum flexibility. Structure can be seen as the system or complexity of beliefs held by members of a social group, and therefore a set of performance practices or processes (Hatch, 1997). Structure that fosters creativity can also be found in Cherns (1976; 1987) through the concept of minimum critical specifications. Minimum critical specification is a means for dealing with complexity, since all systems need a freedom to develop. Morgan (1986) sees minimum critical specification as necessary, opposed to commanding and controlling to the smallest detail. The principle of minimum critical specification preserves the ability to self-organize. Minimum critical specification is a principle according to which a manager should not specify more than is absolutely necessary (Cherns, 1976; 1987, Morgan, 1986).

Rosenborg Ballklub experienced a remarkable success that ranked them as the sixth-best football teams in 1999 after several appearances in the Champions League with comparably fewer resources than team from other leagues. From 1995 to 2002, they qualified every year for the Champions League tournament, reaching the quarter-final in the 1996–1997 season after beating AC Milan (defeated finalist in Champions League season 1992–1993, winner 1993–1994 and, defeated finalist in 1994–1995) 2-1 at Guiseppe Meazza Stadium (Steiro & Saksvik, 2018). In 1997 winning 2-0 home versus Real Madrid. Rosenborg Ballklub won the group stage in season 1999–2000 after defeating Borussia Dortmund (the winner of Champions League season 1996–1997) 3-0 at Westfalen Stadium. In 1999, Rosenborg was ranked as the number sixth best football club in Europe (Ulseth, 2018: Løfdali, 2014). By 2002, Rosenborg was among the most experienced teams in the tournament (Steiro & Saksvik, 2018). Therefore, looking at Rosenborg Ballklub (RBK) and their international appearance is interesting.

The research question in this study is: What factors contributed to RBKs performance?

Theoretical background

Total football was developed by the Dutch coach Rinus Michels and the player and later coach Johan Cruijff (Wilson, 2008; Winner, 2008). The second influence is from Csikszentmihalyi (1996; 2002) and a focus on flow theory, which led to a book on the subject (Andreassen & Wadel, 1989). Buytendijk (1953) described flow and football. When the play is flowing, the football players do not need to concentrate deliberately or strive to find the right positions. The positions are found automatically. Further, absorbed in the play, everything will feel light, without effort and conscious thinking (Buytendijk, 1953). Not only is flow an inherently highly satisfying experience, but it also induces other positive effects such as improved performance, commitment, and innovation (Aubé, Brunelle & Rousseau,

2014; Bakker, Oerlemans, Demerouti, Slot & Ali, 2011; Demerouti, 2006; Eisenberger, Jones, Stinglhamber, Shanock & Randall, 2005).

Total football can be seen as an overall system, a holistic whole according to Wilson (2008). The term total is, in the Netherlands from the 1960s, applied to a wide range of fields (Winner, 2000). In football, it is seeing the individual contribution as a part of a system (Winner, 2000; Michels, 2003; Wilson, 2008). Space (i.e., leaving a space and another player coming into the space), the creation of space through a pass, and the constant switching of positions were central to the concept of total football. Spatial awareness is, therefore, an important prerequisite. Spatial awareness also links to a social-material awareness. In this the material is not fixed to the non-human, but are the team as a *hybrid*, where each component enable each other (Law, 1992). The safety and mastery of the football team as hybrid materiality, is in part the safety of Eggen's insistence of the fixed 11 players and the very overtly presence of Eggen's style of coaching and himself physically there. Endsley, Bolte & Jones (2003) write that a high level of situational awareness means that a situation can be predicted, and the players are one step ahead of that situation. Situational awareness is seen as important mean to optimize performance (Salmon et. al., 2021).

Flow theory can be linked to interaction in football. In all situations, the balance between challenges and skills are important (Steiro & Saksvik, 2018). Csikszentmihalyi (1997) and Jackson and Marsh (1996) identified nine characteristics of flow: balance between challenges and skills, fusion of action and consciousness, clear goals, immediate feedback, concentration and focus on activities, feeling of control, loss of self-consciousness, time distortion, and autoclitic experience. Flow can be achieved by job design (Bakker, 2008; Demerouti, 2006; Salanova, Bakker & Llorens, 2006). There are similarities between Csikszentmihalyi (1975; 1997; 2003) and the demand and control model proposed by Karasek and Theorell (1979). The model states that there is an interaction effect between demand and

control. Later, Karasek and Theorell (1990) included social support in the model. Bakker (2005) found that the job resources autonomy, feedback on the job execution, social support, and a coaching style from the leaders resulted in more experiences of flow. Salanova et al. (2006) found in a longitudinal study of teachers that job resources such as social support and a clear work goal created future flow experiences. Demerouti (2006) found that autonomy, skill variety, experience on work execution, task identity, and task significance had a positive effect on flow experiences. Bakker (2008) documented that autonomy, professional development, and social support contributed to flow. Tasa, Tagger & Seijts (2007) claim that the social interaction within the group is important for collective mastery. Collective mastery is depended on competence and the ability to interact in such a way that challenges are mastered collectively (Gully, Incalcaterra, Josh & Beaubien, 2002). Carron et al. (2002) found that social cohesion has an impact on performance. Kowal and Fortier (1999) found that swimmers who experience strong attachment with team members more often experience flow. LePine et al. (2005) found that challenging job demands had a positive association with job performances.

Role ambiguity, however, has been associated with stress, lower job performances, lower belief in mastery, and negative group cohesion (Ivancevich & Donnely, 1974; Tubre & Collins, 2000; Westgaard, 2006). Role expectations should be communicated to employees directly and continuously (Csikszentmihalyi, 2003).

Case description

During Eggen's era as head coach, 1988–2002, and with half as season in 2010, Rosenborg Ballklub experienced a remarkable success. In brief, winning the national series thirteen times in the period (from 1992–2002 every year) and Champions of the Norwegian Cup five times in the same period. In 1998, Eggen took a year off to write a book, while Trond

Sollied coached them to win the national series and qualify for the Champions League tournament. They qualified for the Champions League tournament again in 2004, 2005, and 2007 after the reign of Eggen. With RBK with Eggen present was a winning recipe that was not that effortlessly duplicated, despite this methodology being known both later on in RBK as well as elsewhere. Eggen and his team of players established and stabilized as a mutually enabling hybrid network (Law, 1992).

The influence on how they played can be traced back to two sources. The most influential source is total football (Eggen & Nyrønning, 1999). Here we can bridge "Total Football" to Eggen and his focus on the interaction between players as a means of exploiting opportunities. Eggen used the term "samhandling" (easiest to translate as *interaction* (Torgersen & Steiro, 2018), meaning a more direct cooperation in action that must be seen in accordance with "godfoten" [preferred leg]). We find the term strong leg to be similar to Martin Seligman's (2003) signature strengths. Salas & Fiore (2004) asserted that an effective team is expected to perform to a greater extent than the sum of the individuals´performance. It is important that the coach challenge the player to provide an optimal challenge in relation to his mastery, thereby creating an equilibrium (Eggen & Nyrønning, 1999). Social interaction can be seen as both a mutual dependency that might generate synergy (De Vries, 1999; Fiore, Salas & Cannon-Bowers, 2001; Mach, Dolan & Tzafrir, 2010).

De Moura & Bellini (2019a) stress that team leaders should shake the skills-challenge equilibrium so that the challenge of learning, adapting, and improving is continuously in the mind of team members to create flow.

The importance of the relationship between coach and athlete has been commented upon by several authors (Baker, Yardley & Coté, 2003; Lyle, 1999). Coaches have been identified as having a significant impact on athletes' satisfaction and performance accomplishments (Jowett

& Cockerill, 2003). Eggen was awarded the UEFA's (Union of European Football Association) coach of the year award in 2001.

Materials and Methods

The empirical data of this study is based on document analysis and semi-structured interviews. The point of departure is Eggen's book "*Godfoten: Samhandling veien til suksess"* [*The preferred leg. Interaction as a road to success*] (Eggen & Nyrønning, 1999). Here, the football philosophy is described and made transparent. We have also examined the following books and reports Skrede, 1992; Ulseth, 1996; Åsvoll, Gudmundsdottir & Karlsdottir (2002; Simensen; 2005; Ulseth, 1996; Leitao,2009: Olsen, Eggen & Ulseth, 2010; Løfdali, 2014; By Riise, 2014; 2106). Documents provide valuable insight into an organization (Scott, 1990). We have seen it as important both to reveal the field and to find significance in our findings from the interviews (Alasuutari, 1995).

We have followed the recommendations of Potrac & Jones (1999) and Potrac, Brewer, Jones, Armour & Hoff (2000), who call for more use of in-depth interviews to better understand the dynamics on the training field, that is, not only understanding the *what* but also in-depth *why* and *how*.

Coach Eggen and four key players from the golden era (1988–-2002 and 2010) were interviewed between September 2015 and February 2016. The interview guide was based on reading the documents listed above and targeted directly to the problem formulation. Eggen was interviewed for 1,5 hours. We also asked four key players to be interviewed; all agreed, and their interviews lasted from 45 to 60 minutes. The players are kept anonymous. All of them were considered to be part of the starting 11 players, played for several seasons, and all had substantial both national league and Champions League experience.

Thematic analysis was adopted to analyze the interview material. This is a method for identifying, analyzing, and reporting patterns within the data analysis (Clarke & Braun, 2014; Braun & Clarke, 2006). Thematic analysis is not bound to a theoretical or epistemological framework (Braun & Clarke, 2006). Thematic analysis is performed through several steps and can be summarized analyzing the data through the process of coding to establish meaningful themes. The actual analysis is not a linear process in the sense that the analyst goes back and forth between the data and the codes, as well as between the themes and the codes. During the process of theme development, themes were continuously revised, meaning, for example, that some themes would be subdivided, and others would be combined with the purpose of fitting the data. This step of the analysis, therefore, involved more interpretation (Braun & Clarke, 2006).

Results and discussion

Coach Eggen put great emphasis on the collective issues (Eggen & Nyrønning, 1999). From the interview he pointed out to the ability facilitate that others perform at their best It is also about taking responsibility for others' development and performance. It is worth noting that, to foster flow, social interactions should be stimulating while contributing to the accomplishment of common tasks (Jackson, 1995; Walker, 2010). Uddin, Mahmood & Fan (2019) argue that in investigating team performance in organizational context, team performance could be seen enhanced from interactions of different factors of individual behaviours.

Løfdali (2014) concluded with "samhandling" as the main factor in Coach Eggen´s clear assumption of playing football and transferring this "picture" to the players. Ola By Rise (2014), who was goalkeeper between 1978 and 1995, assistant coach between 1998 and 2003, and head coach in 2004, points to the same. The same is highlighted during an interview in the TV program "The Miracle in Milano" (referring to RBK's 2-1 win over AC Milan in

1996) (NRK; 2016). Flow theory expanded to a team setting (Sawyer, 2007; van den Hout et al., 2016; Van den Hout, et al., 2018) indicates that team members are more likely to experience flow when appropriate teamwork behaviors are adopted, such as planning, communication, coordination, and social support. This is linked to the social interaction in the current study.

All players interviewed agreed that the basic structure could be identified. All players talked about focusing on the collective before one's own interest. The players recognized an overall theme and structure. They also acknowledge the high quality of training using the same theme. "*After a while, we got tired of Nils Arne´s nagging and adopted to his style. We recognized the pattern, became familiar with our roles, and a feeling of mastery was developed"* (Player 1).

Aubé, Rousseau, & Brunelle (2018) concluded that shared leadership can improve team functioning, thus predisposing members to attain the highly gratifying and productive flow state. By accepting the "nagging" the football players in the currents study also took on a role on contributing to the ideas on a more detailed manner and thereby accepting a shared leadership (Duguay, Hoffmann, Guerrero & Loughead, 2020), by taking on the players part of the responsibilityShared leadership is associated with team creativity (Xie et al., 2021) and team reflexivity (Hadi & Chaudary, 2021).

The Rosenborg philosophy consisted of 50 postulates which cannot be fully articulated here (Steiro & Saksvik, 2018). The play postulates were first introduced in 1994 to ease learning, presented in keywords, and articulated in brief, and in that sense, they are nearly only understandable seen in relation to practical execution (Eggen & Nyrønning, 1999). Based on the interviews, the following postulates seem to be of special importance and are

often repeated and, therefore, serve as a pedagogical tool (Steiro & Saksvik, 2018). They are presented in Table 1.

Table 1 Central play postulates with elaboration

Advance ahead	Start movement before a pass is made.
Third attacker movement	Attackers one and two move, attracting the attention of the opposing team, allowing the third attacker to excel.
Play in lengthwise direction	Focus mainly on forward play.
Speedy transfers	Exploit the immediate possibilities that a mistake or non-intended pass from a co-player provides.
Concurrent movements	Several movements that the opposing team has to react on to, also linked particularly to the third attacker movement.
Create outnumbering situations	One or two players in attack, such as on the left flank, open up different opportunities, creating a dilemma for the right back in defense.

The play postulates are intentionally very short and must be seen in alignment with the practice. The same was very clearly expressed in Eggen's book (Eggen & Nyrønning, 1999).The last 20 minutes of the training was "shadow training," Here, the 11 players from the starting lineup played against the rest of the team. This can be viewed as establishing a fixed team of players as a mutually enabling network, solidifying the players and the team as a mutually enabling hybrid (Law, 1992). This can be seen as a factor for being able to predict movements at a faster pace and thereby creating a better situational awareness (Endsley et al., 2003). Eggen also demanded a high pace in training. However, when considered necessary, Eggen would intercept with his characteristic "Stans!" [Stop!], meaning the play was frozen, and Eggen demonstrated, the principle of "create outnumbering situations" in order for the players to interact properly

All the players in interviews highlighted the intensity and quality of training from Monday to Friday. *"The training sessions were the fundament with clear goals and with high quality"* (Player 3). *"We were the best team so, when the attack formation played against the defense, they were up to the very best. If we had the flow, we knew match day would be not harder"* (Player 1).

Eggen provided detailed insight into the training in the interview. "On Friday, we always played 11 versus X was the starting lineup for the match day on Sunday. X was all the remaining and available players as opponent using an area 66.5 meters in length and 50 meters in wide". Eggen explained that "samhandling" was highlighted in these sessions. Stopping and freezing the formation, he would then explain and educate the players. Keeping the flow, he could direct the players by the postulates, that is, "play in length direction." After 30 minutes, it was time for highly intensive training with high-intensity training for eight minutes with a two-minute break. A total of four runs were performed. Player 2 said, "We were in excellent shape. This was due to the best 11 meeting the remaining players. The intensity was very high." The players' fitness is well documented by Wisløff et al. (2004) and Hoff et al. (2002). When a team performs tasks, performance does not equate to the sum of the individual performances by the team members (Crown & Rosse, 1995). Rather, team performance manifests similarly to the emergent properties of the interaction of parts in complex systems, which are difficult to anticipate and explain (Johnson, 2001; Georgiou, 2003).

Possible limitations of the study

Books and documents describing the era (1988–2010) comprise one of the fundaments of this study. Whereas the data material is available and could be read over and over again,

researchers should keep in mind that the intentions of a writer are not fully understood. Another limitation in this study would be that the interviews were conducted several years after the achievement. This would be a retrospect perspective meaning that details and nuances might become blurry. However, the written material provided memory for the researchers to follow up. One of the players unconditionally claimed that he was not sure whether he could provide objective perspectives if being interviewed during his active career. However, for further studies a long term approach studying the performance of a football club would be adviced.

Overall discussion and conclusion

The postulates are very important in order to understand Rosenborg Ballklub. Even though the philosophy was visible, and even published in 1999, it was hard for the opposing teams to beat Rosenborg. Could this be only because of built up momentum, or because RBK had something the others did not: both Eggen in person as well as his philosophy, or a combination? Wisløff et al. (2004), and Hoff et al. (2002) point out the positive endurance results Rosenborg obtained from their training session. The one factor contributed to the other. Equally important to the postulates are the values so clearly internalized in Eggen. Eggen is a strong believer in equality and people's ability to cope and learn. This can be explained by his background and his work with pupils in schools with need for customization who themselves reported low mastery at school (Skrede, 1992; Eggen & Nyrønning, 1999). People need, in line with flow theory, to experience a balance between challenges and mastery. There is little distance between Eggen´s espoused theory and the theory in use, to borrow terms from Argyris & Schön (1978). Other studies point to how skilled and highly successful coaches highlight openness, understanding, and sensitivity to get the best from their athletes (Jones, Armour & Potrac, 2004). The postulates can also be viewed as cues to

focus on certain aspects of the game and, at the same time, not be too detail-oriented with regard to the execution (Magill, 1998). To direct the players' attention, rather than direct actual behavior, is perceived as positive with regard to developing team player competence (Gréhaigne, Godbout & Bouthier, 2001). This meant interrupting tthe training session , but as a means to make the principle clear and ensure better execution of the offensive play at a higher level of pace and intensity, to interrupt in order to create more flow. It is about acting according to a prescribed plan (Barret, 1998). The game postulates are very important as a minimal structure. We can see them derived from Total Football that was a great inspiration for Eggen.

The postulates presented above are similar to minimal structures allowing maximum flexibility (Barrett, 1998) or minimum critical specification (Morgan, 1986) or open-ended heuristic (Amabile, 1996). A line can also be drawn from flow theory (Csikszentmihalyi, 2002; 1996). Flow theory is addressed extensively in Andreassen & Wadel (1989). In their view, skills are relational and must be balanced with challenges. From Csikszentmihalyi (1996; 2002; 2003), a theory for taking care of both the individual and the team is articulated and, the interesting aspect of Eggen is the theoretical influence and his practice. Only because of built up momentum, or because RBK had something the others did not: both Eggen in person as well as his philosophy? At the same time, if you stick to this foundation, your strong leg will benefit. When you are the left wing, you should constantly run in position and create movements creating space and open up for the first, second, or the third attacker who is passing 45 degrees out when reaching the line, putting the midfielder in a position to score. In this view, Rosenborg can be seen as unique in balancing the individual and collective forces. Leitao (2009) links flow experiences to role consciousness and own perception of mastery. Experiences of flow had a positive consistency with work execution. Things could be

executed more effortlessly and in line with the thinking of Buyntedijk (1953). The performance principles are illustrated in Figure 1.

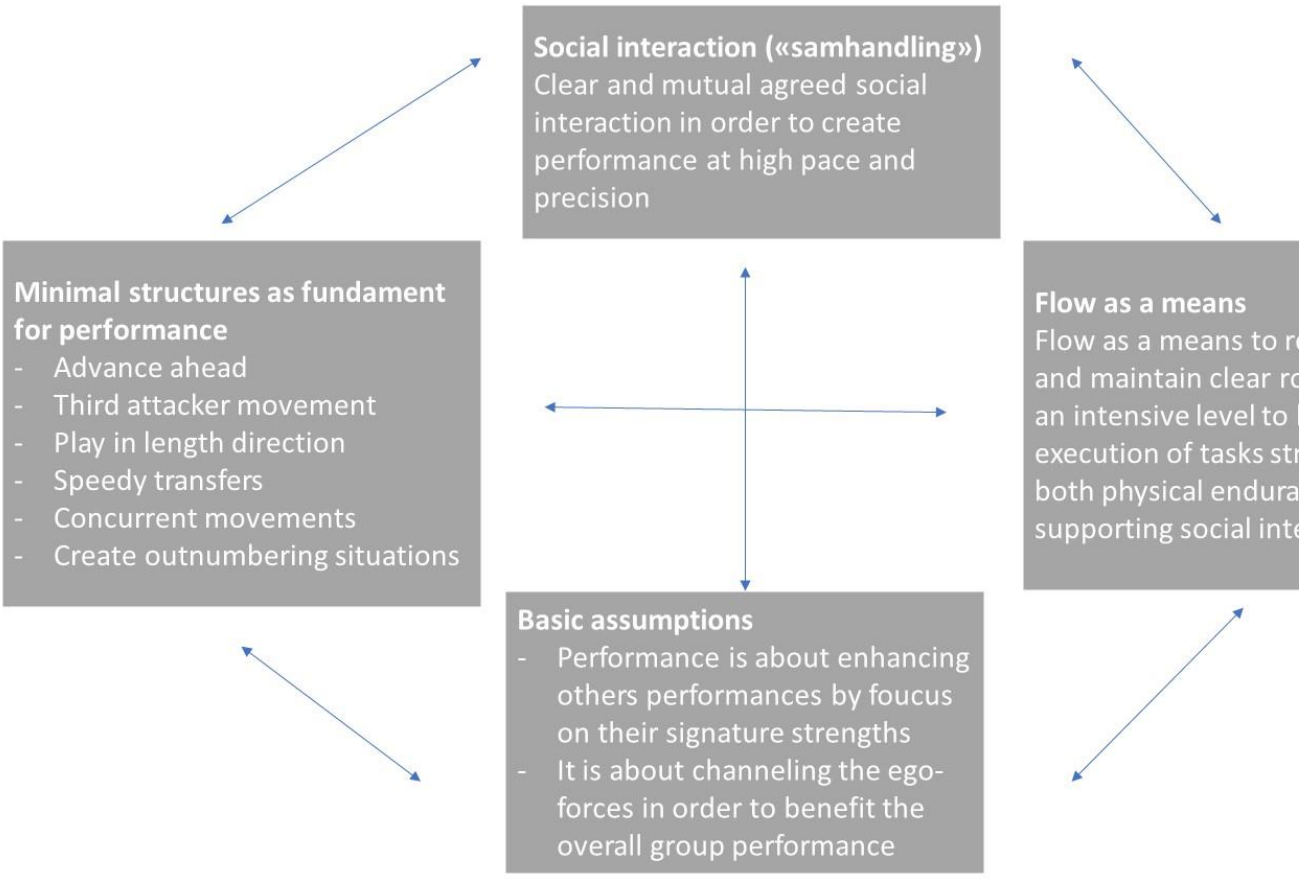

Figure 1. The dynamics between different factors for perfomance

The postulates focused the attention of the player and were a minimum structure making them able to maintain flexibility. This is not to say that these are the only or the most important, but they can be seen as illustrative examples between the ground theme and the play structure, creating an understandable and transparent socio- technical design. This allowed the Rosenborg players to adapt to the situation and react and act as pointed out by Bjurwill (1993). Further, this also meant that the Rosenborg players could interact with greater speed and with higher precision both in training and transferred to matches. High intensity and a high degree of interaction in training meant that the players absorbed a higher capacity. This was secured through Nils Arne Eggen's very active and demanding training style. Social interaction is important in the sense of the social aspects of Rosenborg "preferred leg"

philosophy, but in addition Nils Arne Eggen and the team as a form of mutual reinforcing social material (Law, 1992). Social dynamics often have a material component (Law, 1992). . Using the team, the stabilization of a fixed 11 in a rigid system with large dynamic flexibility, and its own presence as a materialized network, and take advantage of the socially reinforcing properties, connected to coach Eggen himself.

Research regarding the coach's role pinpoints that social interaction forms the core of the coaching process (Cassidy, Jones, & Potrac, 2004; Jones, 2006). Wisløff et al. (2004) pointed out that Rosenborg organized most of the endurance training purely as playing sessions, and stated that satisfactory results were obtained this way. Hoff et al. (2002) documented that interval training with the ball may be as effective as pure hill running. We see these results as something that contributes to our interpretation. When using the concept of flow, this is seen in this study as not only to experience an auto elect experience; in our context it is also seeing flow as a means to execute the tasks at a very high level and with precision, demonstrating that flow cannot be isolated from other factors, as pointed out by Van den Hout et al., (2018). However, our findings are in line that social flow at work is an embryonic concept and a domain of much promise for scholarly research and organizational practice (de Moura & Bellini, 2019b).

The theoretical contributions have been identifying different factors that described the fundament for performance for RBK: using a theoretical og philosophical platform in an organization in order to develop from creates a framework for performance. Performance in football is complex. But there are other areas in society that are complex as well. Integration and practical implementation of different theoretical perspectives can be interesting as both practice and philosophy for any organization. For RBK this was a remarkable combination on

socio- technical principles, flow theory and interaction that was put together by coach Eggen and repeated over and over and internatlised by the players to excel performance.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

There are no potential conflicts of interest identified.

References

Alasuutari, P. (1995). *Researching culture: Qualitative method and cultural studies*. London: Sage.

.

Amabile, T. M. (1996). *Creativity in Context: Update to the Social Psychology of Creativity*. Westview Press. Boulder, CO.

Appelbaum, S. H. (1997). Socio-technical systems theory: an intervention strategy for organizational development. *Management decision*. 35(6), pp. 452-463.

Andreassen, K. S., & Wadel, C. (1989). *Ledelse, teamarbeid og teamutvikling i fotball og Arbeidsliv,* [Management, team work and team development in football and work life], SEEK AS, Sandefjord.

Argyris, C., & Schön, D. (1978). *Organizational Learning. A Theory of Action Perspective.* San Francisco: Jossey- Bass.

Aubé, C., Rousseau, V., & Brunelle, E. (2018). Flow experience in teams: The role of shared leadership. *Journal of occupational health psychology*, 23(2), 198.

Aubé, C., Brunelle, E., & Rousseau, V. (2014). Flow experience and team performance: The role of team goal commitment and information exchange. *Motivation and Emotion*, *38*, 120–130. http://dx.doi.org/10.1007/s11031-013-9365-2

Baker, J. Yardley, J., & Coté, J. (2003). Coach behaviours and athlete satisfaction in team and individual sports. *International Journal of Sport Psychology,* 234, 226-239.

Bakker, A. B., Oerlemans, W., Demerouti, E., Slot, B. B., & Ali, D. K. (2011). Flow and performance: A study among talented Dutch soccer players. *Psychology of Sport and Exercise*, *12*(4), 442-450.

Bakker, A. B. (2008). The work- related flow inventory: Construction and initial validation of the WOLF. *Journal of Vocational behavior*, 72, 400-414. http://dx.doi.org/10.1016/j.jvb.2007.11.007

Bakker, A. B. (2005). Flow among music teachers and their students: The crossover of peak Experiences. *Journal of Vocational Behavior*, 66, 26-44. http://dx.doi.org/10.1016/j.jvb.2003.11.001

Barrett, F. (1998). Coda: Creativity and Improvisation in Organizations: Implications for Organizational Learning. *Organization Science*, 9(5), 605- 622. Doi.org/10.1287/orsc.9.5.605.

Bjurwill, C. (1993). Read and React. The Football Formula. *Perpetual and Motor Skill*, 76, 1983-86.

By Riise, O. (2016). Tilbake til røttene. En sammenlignende studie av RBK i 1999 og 2015. [Back to the Roots. A Comparative Study of RBK in 1999 and 2015], NTNU. Institutt for voksnes læring og rådgivingsvitenskap, Trondheim.

By Riise, O. (2014). *Ballens Bane, [The Ball´s Trajectory]*. Oslo: Gyldendal Norsk Forlag AS.

Braun, V. & Clarke, V. (2006), Using Thematic Analysis in Psychology.*Qualitative Research in Psychology*, 3 (2). pp. 77-101. DOI:10.1191/1478088706qp063oa.

Burns, T. & Stalker, G.M., *The Management of Innovation,* Tavistock, London, 1961, pp. 120-2.

Buyntedijk, F. J. J. (1953). *Le Football: Une etude psychologique.* Haag: Desclee de Brouwer.

Carron, A. V., Colman, M. M., Wheeler, L., & Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. *Journal of Sport & Exercise Psychology,* 24, 168-188. http://dx.doi.org/10.1037/0021-9010.88.6.989

Crown, D.F. & Rosse, J.G. (1995), "Yours, mine and ours: facilitating group productivity through the integration of individual and group goals", *Organizational Behavior and Human Decision Processes,* Vol. 64 No. 2, pp. 138-150.

Cassidy, T., Jones, R., & Potrac, P. (2004). *Understanding sports coaching. The social cultural and pedagogical foundations of coaching practice.* London: Routledge.
Cherns, A. (1987). Principles of socio- technical design revisited. *Human Relations*, Vol. 40. 3, 153-162.
Cherns, A. (1976). The principles of socio- technical design. *Human Relations*, Vol. 29 No. 8, pp. 783- 792.
.
Clarke, V. & Braun, V. (2014) Thematic analysis. In A. C. Michalos (Ed.), *Encyclopaedia of Quality of Life and Well-Being Research* (pp. 6626-6628). Springer, Dordrecht, Netherlands: Springer.
Clegg, C. W. (2000). Sociotechnical principles for system design. *Applied Ergonomics 31*, 463-477.
Csikszentmihalyi, M. (2003). *Good Business: Leadership, Flow, and the Making of Meaning*. New York: Viking Penguin.
Csikszentmihalyi, M. (2002). *Flow- The Psychology of Happiness: The Classic Work on How to Achieve Happiness.* London: Rider.
Csikszentmihalyi, M. (1996). *Creativity- Flow and the Psychology of Discovery and Intervention*. New York: HarperCollins.
Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety: Experiencing flow in work and play*. San Francisco: Jossey- Bass, CA.
Demerouti, E. (2006). Job characteristics, flow, and performance: the moderating role of Conscientiousness. *Journal of Occupational Health Psychology*, 11, 266-280. http://dx.doi.org/10.1037/1076-8998.11.3.266
de Moura Jr, P. J., & Bellini, C. G. P. (2019). Shared flow in teams: team vibration as emergent property, metaphor and surrogate measure. Team Performance Management: An International Journal. Vol. 25 No. 7/8, pp. 440-456. https://doi.org/10.1108/TPM-12-2018-0072
de Moura Jr, P. J., & Bellini, C. G. P. (2019). The measurement of flow and social flow at work: a 30-year systematic review of the literature. *Personnel Review*. Vol. 49 No. 2, pp. 537-570. https://doi.org/10.1108/PR-07-2018-0240.
De Vries, M. F. R. (1999). High- performance teams: lessons from the pygmies. *Organizational Dynamics, 27 (3),* 66-77.
Duguay, A. M., Hoffmann, M. D., Guerrero, M. D. & Loughead, T. M. (2020). An examination of the temporal nature of shared athlete leadership. A longitudinal case study of a competitive youth male ice hockey team. *International Journal of Sport and Exercise Psychology*, *18*(5), 672-686.
Eggen, N. A. (2018). Før avspark [Before Kick-off]. In, Ulseth, O. (2018). *Nils Arne. Et liv i svart og hvitt [Nils Arne. A Life in Black and White]*. Oslo: Aschehoug & Co.
Eggen, N. A., & Nyrønning, S. (1999). *Godfoten: Samhandling- veien til suksess. [The strong leg: Interaction as the road to success]*. Oslo: Aschehoug.
Eisenberger, R., Jones, J. R., Stinglhamber, F., Shanock, L., & Randall, A. T. (2005). Flow experiences at work: For high need achievers alone? *Journal of Organizational Behavior, 26,* 755–775. http://dx.doi.org/10.1002/job.337
Emery, R.E. & Trist, E.L., "The causal texture of organizational environments", *Human Relations*, Vol. 18, 1965, pp. 21-32.
Endsley, M. R., Bolte, B., & Jones, D. G. (2003), *Designing for Situation Awareness: An Approach to User-Centered Design*. CRC Press: Boca Raton, FL.
Fiore, S. M., Salas, E., & Cannon-Bowers, J. A. (2001). Group dynamics and shared mental model development. In: M. London (Ed.), *How people evaluate others in organisations* (pp. 309-336). Mahwah, NJ: Erlbaum.
Georgiou, I. (2003). "The idea of emergent property", *Journal of the Operational Research*

Society, Vol. 54, No. 3, pp. 239-247.
Gréhaigne, J. F., Godbout, P., & Bouthier, D. (2001). The teaching and Learning of Decision Making in Team Sports. *Quest,* 53, 59- 76. DOI:10.1080/00336297.2001.10491730.
Hadi, N. U., & Chaudhary, A. (2021). Impact of shared leadership on team performance through team reflexivity: examining the moderating role of task complexity. *Team Performance Management: An International Journal*. Vol. 27 No. 5/6, 2021 pp. 391-405. https://doi.org/10.1108/TPM-10-2020-0085
Hatch, M. J. (1997). Jazzing up the theory of organizational improvisation. In: J. P. Walsh, & A. Huff (Eds.), *Advances in Strategic Management*, CT: Jain, Greenwich.
Hedberg, B., Nystrom, P., & Starbuck, W. (1976). Camping on seesaws: prescriptions for a self- designing organization. *Administrative Science Quarterly*, 21, 41- 65.
Hoff, J., Wisløff, U., Engen, L.C., Kemi, O. J., & Helgerud, J. (2002). Soccer specific aerobic endurance training. *British Journal of Sports Medicine,* 36, 218-21.
Hulme, A., Mclean, S., & Salmon, P. M. (2021). Sport as a Complex Socio- Technical System. In. Salmon, P. M., McLean, S., Dallat, C., Mansfield, N., Solomon, C., & Hulme, A. (eds.), Human Factors and Ergonomics in Sport: Applications and Future Directions. Boca Raton: CRC Press.
Ivancevich, J. M., & Donnelly, J. H. (1974). A study of role clarity and need for clarity in three occupational groups. *Academy of Management Journal,* 17, 28-36. DOI: 10.2307/254768.
Jackson, S. A., Thomas, P. R., Marsh, H. W., & Smethurst, C. J. (2001). Relationships between flow, self-concept, psychological skills, and performance. *Journal of Applied Sport Psychology*, 13, 154–178. http://dx.doi.org/10.1080/104132001753149865
Jackson, S. A., Kimiecik, J. C., Ford, S., & Marsh, H. W. (1998). Psychological correlates of flow in sport. *Journal of Sport & Exercise Psychology*, 20, 358–378.
Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The Flow State Scale. *Journal of sport and exercise psychology*, *18*(1), 17-35.
Jackson, S. A. (1995). Factors influencing the occurrence of flow states in elite athletes. *Journal of Applied Sport Psychology, 7,* 138–163. http://dx.doi.org/10.1080/10413209508406962
Johnson, S. (2001). *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*. New York: Scribner.
Jones, R. (2006). *The sports coach as educator*. London: Routledge.
Jones, R., Armour, K., & Potrac, P. (2004). *Sport coaching cultures. From practice to Theory*. London: Routledge.
Jowett, S., & Cockerill, I. M. (2003). Olympic medallists´perspective of the athlete- coach Relationship. *Psychology of Sport and Exercise,* 313-331. Doi:10.1016/S1469-0292(02)00011-0.
Karasek Jr, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative science quarterly*, 285-308.
Kowal, J., & Fortier, M. S. (1999). Testing relationships from the hierarchical model of intrinsic and extrinsic motivation using flow as a motivational consequence. *Research Quarterly for Exercise & Sport,* 71, 171-181. http://dx.doi.org/10.1080/02701367.2000.10608895
Law, J. (1992). Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity. *Systemic Practice and Action Research, 5*(4), 379-393.
LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation for inconsistent

relationships among stressors and performance. *Academy of Management Journal,* 48, 764–775. 10.5465/AMJ.2005.18803921

Leitao, C. E. (2009). I "Godfotens" fotspor. En kvantitativ undersøkelse om flytopplevelser og jobbutførelse hos de ansatte i RBK [In the foot step of the preffered leg. A quantitative investigation regarding flow experiences and work performance in RBK]. *Unpublished master thesis*, Department of Psychology, NTNU, Trondheim.

Losier, G. F., & Vallerand, R. J. (1994). The temporal relationship between perceived competence and self- determined motivation. *Journal of Social Psychology*, 134, 793-801.

Lyle, J. (1999). Coaching philosophy and behavior. In: N. Cross & J. Lyle, J. (Eds.). *The coaching process: Principles and practice for sport*, Butterworth- Heineman, Oxford.

Løfdali, B. (2014). *I skyggen av Eggen. Storhetstiden, fallet og veien tilbake for Rosenborg Ballklub. [In the Shadow of Eggen. The Greatness, the Fall and Way Back for Rosenborg Ballklub]*. Kagge forlag, Oslo.

Mach, M., Dolan, S., & Tzafrir, S. (2010). The differential effect of team members' trust on team performance: The mediation role of team cohesion. *Journal of Occupational and Organizational Psychology*, *83*(3), 771-794.

Magill, R. A. (1998). *Motor learning. Concepts and applications.* McGraw- Hill, London.

Michels, R. (2003). *Teambuilding: The Road To Success.* Reedswain Incorporated, Ridge Rd Spring City, PA.

Montuori, A. (2003), The complexity of improvisation and the improvisation of complexity: Social science, art and creativity. *Human Relations*, 56, 2. DOI: 10.1177/0018726703056002893.

Morgan, G. (1986). *Images of Organizations.* Sage Publishing, London.

NRK (2016), Rosenborg og mirakelet i Milano [Rosenborg and the Miracle in Milano]. Part of the Norwegian Broadcasting Service series "Best in the World. Aired January 16. 2016. Available at. https://tv.nrk.no/program/mspo31010316tolk/rosenborg-og-mirakelet-i-milano

Olsen, E. D., Eggen, N. A. & Ulseth, O. 2010. *Det viktigste av alt uviktig [The most important of all unimportant]*. Oslo: Aschehoug.

Potrac, P., Brewer, C., Jones, R., Armour, K., & Hoff, J. (2000). Toward an Holistic Understanding of the Coaching Process. *Quest*, 52:2, 186-199. DOI: 10.1080/00336297.2000.10491709.

Potrac, P., & Jones, R. L. (1999). The invisible ingredient in coaching knowledge: A case for recognizing and researching the social component. *Sociology of Sport* (2(1).

Salmon, P. M.,Hulme, A., McLean, S., Solomon, C. (2021). An Introduction to Human Factors and Ergonomics in Sport. In. Salmon, P. M., McLean, S., Dallat, C., Mansfield, N., Solomon, C., & Hulme, A. (eds.), *Human Factors and Ergonomics in Sport: Applications and Future Directions*. Boca Raton: CRC Press.

Steiro, T. J., & Saksvik, P. Ø. (2018). Learning from Sports: Samhandling and Risk in Soccer. In G.-E. Torgersen (Ed.), Interaction: 'Samhandling' Under Risk. A Step Ahead of the Unforeseen (pp. 413–428). Oslo: Cappelen Damm Akademisk. DOI: https:// doi.org/10.23865/noasp.36.ch22 License: CC BY-NC 4.0

Rothstein, H. (2006). Afghanistan and The Troubled Future of Unconventional Warfare. Annapolis, MD: Naval Institute Press.

Salanova, M., Bakker, A. B., & Llorens, S. (2006). Flow at work: evidence for an upward spiral of personal and organizational resources. *Journal of Happiness Studies*, 7, 1-22. DOI: 10.1007/s10902-005-8854-8.

Salas, E. & Fiore, S. M. (2004). Why team cognition? An Overview. In, E. Salas & S. M.

Fiore, (Eds.), *Team Cognition: Understanding the factors that drive process and performance* (pp. 3-8). Washington DC: American Psychological Association.
Sawyer, K. (2007). *Group genius: The creative power of collaboration*. Cambridge, MA: Basic Books.
Scott, J. (1990). A Matter of Record. Documentary Sources in Social Research. Polity Press, Cambridge.
Seligman, M. E. P. (2003). *Authentic happiness- using the new positive psychology to realize your potential for lasting fulfillment.* Nicholas- Brealey Publishing, London.
Simensen, J. O. (2005). Godfot- arven. Knut Torbjørn Eggen i samhandling med Nils A, [Strong leg heritage. Knut Torbjørn Eggen in interaction with Nils A.], Aschehoug & Co, Oslo.
.
Skrede, I. (1992). *Rosenborg. Svart på hvitt [Rosenborg. In Black and White].* Scanbok, Trondheim.
Svardal, G. (2007). *Historien om Rosenborg Ballklub 1917-2007 [The history of Rosenborg Ballklub].* Tapir Akademisk Forlag, Trondheim.
Tasa, K., Taggar, S., & Seijts, G. H. (2007). The development of collective efficacy in teams: A multilevel and longitudinal perspective. *Journal of Applied Psychology*, 92, 17-27. http://dx.doi.org/10.1037/0021-9010.92.1.17
Thorsrud, E. (1968). Socio-technical approach to job design and organizational development. *Management International Review*, 120-131.
Torgersen, G.-E., & Steiro, T. J. (2018). Defining the Term Samhandling. In G.-E. Torgersen (Ed.), Interaction: 'Samhandling' Under Risk. A Step Ahead of the Unforeseen (pp. 39–54). Oslo: Cappelen Damm Akademisk. DOI: https://doi.org/10.23865/noasp.36.ch2 License: CC BY-NC 4.0.
Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of the longwall method of coal-getting: An examination of the psychological situation and defences of a work group in relation to the social structure and technological content of the work system. *Human relations*, *4*(1), 3-38.
Tubre, T. C., & Collins, J. M. (2000). Jackson and Schuler (1985) revisited: A meta-analysis of the relationships between role ambiguity, role conflict, and job performance. *Journal of Management*, 26 (1), 155-169. DOI: 10.1177/014920630002600104.
Uddin, M. A., Mahmood, M., & Fan, L. (2019). Why individual employee engagement matters for team performance? *Team Performance Management: Team Performance Management*, Vol. 25 No. 1/2, pp. 47-68. https://doi.org/10.1108/TPM-12-2017-0078
Ulseth, O. (2018). *Nils Arne. Et liv i svart og hvitt [Nils Arne. A Life in Black and White].* Oslo: Aschehoug & Co.
Ulseth, O. (1996), "Sport" [Sport]. In: Søraa, G., *Trondheim. Natur, kultur og mennesker.* [Trondheim. Nature, Culture and Humans], Adresseavisen Forlag, Trondheim.
van den Hout, J. J. J., Davis, O. C., & Walrave, B. (2016). The application of team flow theory. In L. Harmat, F. Ø. Andersen, F. Ullén, J. Wright, & G. Saldo (Eds.), *Flow experience: Empirical research and application* (pp. 233–247). New York, NY: Springer. http://dx.doi.org/10.1007/978-3-319-28634-1_15.
Walker, G. H., Stanton, N. A., Salmon, P. M., & Jenkins, D. P. (2008). A review of sociotechnical systems theory: a classic concept for new command and control paradigms. *Theoretical issues in ergonomics science*, *9*(6), 479-499.
Walker, C. (2010). Experiencing flow: Is doing it together better than doing it alone? *The Journal of Positive Psychology, 5*, 3–11. http://dx.doi.org/

10.1080/17439760903271116
Westgaard, A. A. (2006). Rolleklarhet, rollekonflikt, kohesjon og prestasjon: en empirisk studie blant norske eliteutøvere. [Role clarity, role conflict, cohesion and performance: an empirical study of Norwegian elite athletes]. *Masteroppgave, Seksjon for Coaching og Idrettspsykologi*, Norges idrettshøgskole, Oslo.
Wilson, J. (2008). *Inverting the Pyramid. The History of Football Tactics*. London: Orion Books.
Winner, D. (2000). *Brilliant Orange. The Neurotic Genius of Dutch Football.* London: Bloomsbury.
Wisløff, U., Castagna, C., Helgerud, J., Jones, R., & Hoff, J. (2004). Strong correlation of maximal squat strength with the sprint performance and vertical jump height in elite soccer players. *British Journal of Sports Medicine* 38, 285-288. DOI:10.1136/bjsm.2002.002071.
Xie, L., Han, S. J., Beyerlein, M., Lu, J., Vukin, L., & Boehm, R. (2021). Shared leadership and team creativity: a team level mixed-methods study. *Team Performance Management: An International Journal*. ol. 27 No. 7/8, pp. 505-523. https://doi.org/10.1108/TPM-11-2020-0097
Åsvoll, H., Gudmundsdottir, S., & Karlsdottir, R. (2002). Den femte faktor: en kasusstudie av Bjørn Hansen som talentutvikler i Rosenborg Ballklubb. [The Fifth Factor: A Casus Study of Bjørn Hansen as Talent Developer in Rosenborg Ballklubb]. Norges Teknisk-Naturvitenskapelige Universitet, Pedagogisk institutt, Trondheim.