

**An Observational Analysis of the Impact of Board Dynamics and Directors'
Participation on Perceived Board Effectiveness**

Amedeo Pugliese

School of Accountancy
Queensland University of Technology
2 George Street GPO Box 2434
Brisbane QLD 4001 Australia
E-mail: amedeo.pugliese@qut.edu.au
Phone: +61 7 3138 1022

Gavin Nicholson

School of Accountancy
Queensland University of Technology
2 George Street GPO Box 2434
Brisbane QLD 4001 Australia
E-mail: g.nicholson@qut.edu.au
Phone: +61 7 3138 9299

Pieter-Jan Bezemer

School of Accountancy
Queensland University of Technology
2 George Street GPO Box 2434
Brisbane QLD 4001 Australia
E-mail: Pieterjan.bezemer@qut.edu.au
Phone: +61 7 3138 4043

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ABSTRACT

This study addresses calls for closer examination of board dynamics by offering an inside view of director interactions. Video-observations of three board meetings at each of two Australian corporations matched with director interviews and secondary data reveal distinct patterns of director interactions, their sources of variation and impact on perceived board effectiveness. Our data reveal that director interactions are multi-dimensional and dynamic: while group interactions across agenda items are similar, with a few directors leading the discussion, the contributing directors change across items. Moreover, directors' inclusiveness and evenness of participation are associated with higher perceptions of board effectiveness. Last, we find that director interactions change with the nature of the items, board climate and board meeting arrangements. The study contributes to the literature by moving beyond the individual-level analysis of directors' skills or independence, and offering a detailed view of how the joint group and individual dimensions of board dynamics affect board functioning.

KEY WORDS: director interactions; video-observations; boardroom dynamics; board effectiveness

INTRODUCTION

For decades scholars and practitioners have studied the board as the ultimate corporate decision-makers (Mace, 1971). Since this power is vested in the board (not individual directors), there is surprising little direct knowledge of how directors discharge their duties in the main group arena, the board meeting (Kiel and Nicholson, 2003). Despite numerous examples of governance failure being linked to dysfunctional group operations as opposed to lapses in individual skill or diligence (see particularly Austin J in *ASIC v Healey and Ors*), most corporate governance research treats the group dynamic as a black box (Huse, 2005).

Board research suffers from a narrow focus on the individual (e.g. director independence or incentives) rather than the group (Pye and Pettigrew, 2005). Even studies that do investigate group-level attributes overwhelmingly assume board behaviours can be inferred by simply combining individual attributes (e.g. the proportion of outside directors, proportion of women, presence of skill such as finance, proportion of shares owned by directors). The group literature reveals, however, such linear and additive forms of measurement are often suspect as they ignore how skills and attributes combine to produce group outcomes (Klein, Dansereau and Hall, 1994). Problems of process loss, group polarization and cognitive conflict are examples of phenomena that are unlikely to be found using the additive measurement approaches favoured by demography-focused studies (Steiner, 1972).

Consequently, recent works call for new, direct investigation into board behaviour (Pettigrew, 2013). Behaviour based studies supplement traditional research on the role of incentives and human capital in corporate governance by proposing that directors and senior managers must also contend with group dynamics. These studies posit that directors' participation and contributions during board meetings are key factors in board effectiveness (Bezemer et al., 2014; Machold and Farquhar, 2013).

This study offers an insider's view of director interactions during board meetings.

Specifically, we seek to answer the following three questions: (1) How do directors interact during meetings? (2) What, if any, are the patterns of interactions and what are their sources of variation, if any? (3) Are different interaction patterns related to directors' perceptions of the board's effectiveness?

We sought to answer these questions by entering the boardroom of two Australian companies. Given our research questions, we sought companies of a comparable size and operating in the same environment/industry, with similar boards in terms of composition and expected roles. In both corporations we video-recorded three board meetings over a period of six months, collected field notes, reviewed board minutes, conducted director interviews and administered multiple mini-surveys. These data enabled us to obtain an overview of relationships between context, board operations, director interactions and (perceived) board effectiveness in terms of quality of the discussion.

The data provided distinct answers to our research questions. *First*, while there were similarities in board interactions, there were also variations between boards and across agenda items: a director's participation during a meeting is dynamic and variable. In drawing this conclusion, we offer better measures of director participation than that proposed by archival research – e.g. attendance at board meetings (Vafeas, 1999). *Second*, we find that evenness in director participation and inclusiveness is associated with higher perceptions of board effectiveness, a finding that tentatively supports the proposition that board interactions matter to board outcomes. *Third*, our analysis provides evidence that seemingly minor contextual factors have important effects on interaction patterns. While both boards faced environmental turbulence, differences in the timing and length of their board meetings led to different interaction patterns. Further, when a board focused on operational rather than strategic issues, director participation was less balanced and the quality of boardroom discussions was lower.

THEORETICAL BACKGROUND

Traditionally, studies of boards have concentrated on linking measures of board demography, particularly independence, with firm performance. Reviews and meta-analyses (e.g. Dalton et al., 1998) consistently conclude there is little, if any, evidence of any robust or consistent relationship. More than a decade ago, Forbes and Milliken (1999) set a new challenge for the research agenda by theorizing that board task performance depends on more than demography. They proposed that social-psychological processes affect board performance through the exchange of information and critical discussion within the boardroom.

Forbes & Milliken's (1999) focus has sparked few studies aimed at directly identifying the factors leading to effective group performance in the boardroom (Roberts et al., 2005; Stevenson and Radin, 2014). Instead, insider studies of boards focus on the role of the individual rather than the nature of the group's dynamics (Pye, 2001). For instance, Parker documented the "selective championing of strategies by directors" and individual directors' efforts in "navigating strategic initiatives through organizational politics" (2007: 1454). Similarly, studies have examined the contribution of individuals such as the Chair (Rechner and Dalton, 1991), non-executive directors (Pye and Camm, 2003) or CEO (Maitlis, 2004). While these studies are interested in how the board's work is achieved, they focus on the individual, rather than the group as a whole (Dalton and Dalton, 2011).

Most studies of boards do not focus on the operations of the group, as they investigate the phenomena from a distance. These employ a traditional input-output approach to indirectly study group performance (Pettigrew, 1997), for instance investigating the number and length of board meetings as indicators of board activity and diligence (e.g. Brown and Caylor, 2006). While useful first steps, these approaches are at best blunt measures of boardroom dynamics that may leave important gaps in our understanding of the board's work (He and Huang, 2011).

Both the focus on individual directors and the lack of in-depth analysis around the group element of the board stand in contrast to the same nature of the board. Research on groups

emphasizes the dynamic and combinatorial aspects of group behaviour to assess their performance. For instance, numerous studies emphasize the importance of member participation (Huisman, 2001), group morale and consensus building (Jehn et al., 1999) or the role of cognition at an individual and group level (Kilduff et al., 2000) for group effectiveness. The small-groups literature prompts us to studying the phenomena of interest directly, if we are to uncover the conditions under which the board dynamics impact on the board functioning and effectiveness (Cohen et al., 2011; Leach et al., 2009).

It is well established that groups that meet to discuss and generate ideas are different from others that simply vote on issues (McGrath, 1984). Similarly, the dynamics involved in face-to-face interactions during a meeting are more likely to produce better outcomes than would be achieved by simply combining individual opinions. Consequently, group interactions have long been recognized as a useful indicator of group dynamics and a focus for improving group effectiveness (Hackman, 1987: 321). More generally, established theoretical models consistently recognize that processes matter to group outcomes (Woolley, 1998), and subsequent empirical evidence suggests that interactions patterns (i.e. the group's "collective intelligence") appear to matter more to group performance than traditional, individual member attributes (i.e. general intelligence or IQ) (Woolley et al., 2010). Put simply, interaction patterns appear better predictors of group performance than aggregated individual characteristics (Hackman, 2012; Wageman, 2001).

Interactions in the boardroom are likely even more salient to board performance than interactions in a traditional group setting for two reasons. *First*, Top-Management-Teams (TMT) literature suggests board composition differs substantially from other types of organizational workgroups (Finkelstein et al., 1996). Boards of directors are usually larger (Jehn, 1995) and often contain a significant number of part-time outsiders. Thus, some of the board members may possess limited organizational knowledge, have limited time and may have

differing levels of commitment as they serve on multiple boards simultaneously (Hillman, Nicholson and Shropshire, 2008). Furthermore, the split between insiders and outsiders can give rise to significant information asymmetries between inside and outside directors, as well as between outside directors (Adams and Ferreira, 2007).

In this context, board meetings provide a critical forum for the group. Given boards work quite differently to most traditional groups (i.e. they take key decisions in a limited series of 4-10 meetings a year), there would appear to be limited other opportunities for the exchange of ideas and dialogue between all members to overcome information asymmetries. Board meetings are, therefore, a key mechanism to develop a common understanding of the issues facing the company. Other activities (e.g. circulating papers, committee meetings, and individual conversations) lack the whole-group exchange that takes place in the meeting and can lead to different group decisions and outcomes. However, we still have a very limited understanding of what happens in the boardroom – what are the interactions like, and how do they differ from other workgroups. Therefore, our first two research questions are quite basic, but necessary first steps:

RQ1: How do directors interact during meetings?

RQ2: What are the patterns of interactions and what are their sources of variation, if any?

Traditional governance research has largely focused on distal measures of the board's performance such as specific firm level outputs; for instance, a board's ability to minimize agency costs is generally assessed at the organisational level (Daily et al., 2003). Researchers interested in the opening the black box of the board's work instead focus on more proximal measures of group performance. Forbes and Milliken identified two dimensions of board effectiveness: (1) task performance, defined as the board's ability to carry out their monitoring and resource provision tasks, and (2) the ability of directors to working together in a cohesive

way (1999: 492).

Director interactions provide an important direct assessment of the behaviours associated with the second criteria. Eventually, it may also be possible to understand how director demographics (e.g. director experience or independence), different incentives and group level diversity translate into board functioning. Furthermore, given the groups' literature suggests that (group) process losses are likely inhibitors of the board's potential (Steiner, 1972) there is a strong likelihood of a direct relationship between boardroom interactions and group performance. Group process losses can take several forms: for instance, group polarization occurs when directors' decisions are unduly influenced by past experiences and do not take account of the current decision context (Zhu, 2013); pluralistic ignorance results in directors falsely assuming to know other directors' views (Westphal and Bednar, 2005) and coalition formation sterilizes group dynamics through isolation of members (Cronin et al., 2011). Given these effects are largely unknown to board members, directors (e.g. through interviews) are unlikely to reveal these mechanisms in action. Instead, studying interaction patterns offers the opportunity to objectively capture the exchange of multiple views, both positive and negative associated with these and similar effects, thus leading to a better understanding of how boards work (Watson and Michaelsen, 1988). Our third research question is a first step in this direction, so we seek to understand:

RQ3: Are different interaction patterns related to directors' perceptions of the board's effectiveness?

METHODS

Studying boards in vivo allows gathering data as close to the phenomena as possible (Pettigrew, 1997); hence it is the most fruitful approach for our research questions. Accessing the boardroom for most research has proven to be difficult (Leblanc and Schwartz, 2007), so there

is limited guidance on what to expect from direct observation. We designed a case method to explore new ideas and concepts in an area lacking a strong theoretical background (Marshall and Rossman, 2010). Further, case studies allowed for inductive analysis in the contexts where they unfold (Currall et al., 1999; Eisenhardt, 1989). Our central research questions were best addressed by capturing interactions as they happen, so we primarily rely on direct observations (Samra-Fredericks, 2000) facilitated by video-taping board meetings.

Video-taping provides greater reliability as researchers can watch meetings multiple times to clarify and/or recode (Bakeman et al., 2009). It allows for a more reliable quantification and interpretation of director interactions compared with interviews or participant observation as it reduces the risk of recollection bias (Newman and Lindsay, 2009). This last point is relevant when studying interactions as directors' assessment of specific events can diverge from reality (Moon et al., 2004).

Given the exploratory nature of our enquiry, we employed theoretical sampling and recruited two boards similar in terms of board composition, industry, funding sources, corporate structure and environment (Patton, 2002). Since some literature suggests that board behaviour might vary between meetings (Charan, 2005), we video-taped three meetings for each organization. This allowed us to ensure the observed dynamics were not a function of a single, idiosyncratic meeting but a realistic reflection of practices at the two corporations (Kulka, 1981). In return for their participation, boards were provided with feedback, including possible areas for development. All directors provided written consent.

Case Organizations

Data for this study were collected in two Australian organizations in 2010-2011. The Green corporation was a public, member-based organization governed by a board of seven non-executive directors, with an annual turnover of approximately AU \$4 million. Of the seven

directors, four were drawn from the membership (and shared a specific profession); one board member was a business professional, another was a partner with a professional services company and the final board member headed a state government instrumentality. Four of the seven directors were female and the tenure ranged from less than a year to more than 15 years, with an average of 4.5 years. Just prior to the study, Green had seconded its CEO to a strategic initiative in response to changing government funding policy. The CEO and Acting-CEO both attended all board meetings, as did a minute secretary. The past Chair of the board was also a director and regularly attended meetings. Green had three board committees, each with three directors (including a Chair). Board committees were delegated to specific issues and reported back to the board during the meetings.

The Red corporation was also a public, member-based organization governed by a board of eight non-executive directors with an annual turnover of approximately AU \$5 million. Five of Red's directors were drawn from a specific profession and held leadership positions with various members of the organization. The three remaining directors included a senior government employee, a regional government member and a member with strong links to a specific segment of the community. Two of the eight directors were female and the tenure ranged from one year to more than 10 years, with an average of 6 years. The CEO for Red attended all board meetings along with a minute secretary. The RED board had two sub-committees with three members each. The two committee Chairs reported back to the board about the committees' work at each board meeting.

Both Green and Red are public companies limited by guarantee. Under the *Australian Corporations Act 2001* directors share equivalent legal obligations and liabilities to for-profit firms (such as fiduciary duties, a duty to exercise due care and diligence as well as requirements to not trade while insolvent). During the observation period Red and Green's industry was undergoing a structural change that significantly affected both organizations. A government

change in funding policy for this sector suggested disruptions to the business model of both organizations in the near future. Thus, both boards faced severe environmental uncertainty and were in the process of working out the exact nature of the upcoming change and optimal organizational responses during the period of data collection.

Data Collection

Board Observations. Members of the research team attended and video-taped three board meetings for both Red and Green over a period of six months. The three meetings lasted 14 hours for RED and 6.5 hours for Green, and we videoed their entirety. Each observation involved discretely setting up two or three video cameras. Team members took notes on the meeting. While the video cameras were noticeable and prompted comments early in the initial meeting (e.g. “Is my makeup OK?”), they appeared less invasive as time passed. One member of the research team with extensive experience working with boards characterized the interactions we recorded as typical of most board meetings. Similarly, board members indicated that our presence did not affect behaviour; as one participant commented “It makes no difference”. Any participant could ask for filming to stop at any time. We were not asked to do this at any point. Table 1 provides a summary of the board meetings.

Insert Table 1 about here

Additional Data Sources. The research team also conducted participant interviews, administered surveys and reviewed relevant documents. A total of 14 individuals were interviewed and repeat interviews were conducted with the Chairs and CEOs. Interviews focused on perceived functioning of the boards, particularly board processes, information exchange, decision-making and boardroom interactions. Participants were also asked to assess

their fellow directors' contributions. Two researchers attended each interview and took detailed notes, including word for word quotes, where possible.

Observation participants completed a mini-survey following the discussion of each item and at the end of the meeting. Directors rated aspects of the just completed discussion for each agenda item (e.g. the quality of the discussion). Similarly, participants rated aspects of the entire meeting at its conclusion, such as the overall meeting quality (see Appendix A and B). We also reviewed annual reports, minutes from previous meetings and agendas, together with the relevant industry reports to understand meeting context.

Data Coding and Analysis

Data analysis involved a four-stage inductive process after the data collection was completed. While the method and results are presented linearly, the findings emerged from an iterative process between theory and the available evidence (Suddaby, 2006). Specifically, we developed tentative findings, revisited the literature on boards and on groups, and refined our focus through re-engaging in the data analysis to arrive at the phenomena we present.

Step 1: Narrative development. We began with a review of relevant documentary evidence to build a profile of each organization and board. This initial review started with an analysis of board papers, minutes from prior meetings and annual reports; it was supplemented with interview data and correspondence with the organization when we were unsure of details. In building the profiles, we focused on understanding the operating environments of the organizations, the formal and informal power structures surrounding the corporate governance of each company and how board meetings were organized and run. Both boards had developed an annual meeting schedule (calendar), used a pre-circulated and planned meeting agenda, made extensive use of board papers circulated prior to the meeting and kept records or minutes. All directors were provided a standard board pack with papers on the issues facing the

upcoming meeting prior to the meetings. To ensure validity, we initially assessed whether boards actually made decisions in their meetings or if out-of-boards interactions were predominant. Observation clearly established both boards did. A review of the interview notes highlighted that directors focused on the meeting as the source of decision and board functionality; out-of-boardroom contacts between directors did not appear to be an issue of significance to the participants. This conclusion is corroborated by directors' attendance rate (84% across all 48 items) that, combined with the interview notes, indicate that any out-of-board activities were not substitutes for face-to-face meetings. For Red and Green, board meetings represented the main arena where directors to interacted and made decisions.

Step 2: Structuring the analysis. We next carried out a review of the observation data for each meeting to develop a general understanding of each board's dynamics and interactions. We reviewed each board meeting, making broad observations on the nature of the interactions and discussion patterns. Specifically, we sought to understand the climate of discussions, nature of the issues discussed, engagement of board members, and key roles played by individual directors. Following this review, we made a series of decisions to structure the analysis as outlined in step 3.

Step 3: Interaction Analysis. Our initial review indicated discussions were arranged as agenda items and varied from long monologues to debates among participants. These agenda items varied in type (some were strategic while others operational), as did the general tone of discussion. We decided therefore to map, as objectively as possible, the structure of director interactions at the agenda item level.

Coding was based on the communication and small-group literatures. We proceeded to code whether each participant was either talking or not talking (Olguin-Olguin and Pentland, 2010) so as to measure two key markers of director interactions: duration and turn-taking. Duration (speaking time) measures the amount of time (in seconds) each participant was talking

during an agenda items. Turn-taking represents the number of times (in turns) a participant speaks during the discussion (Woolley et al., 2010). We measured the participant turns via coding each explicit and recognizable verbal interjection of a participant. Both measures are important but different indicators of the underlying structure of the conversation (Acosta and Ward, 2011). For example, take an interaction where Participant A questions what Participant B has just explained in detail. Participant A's short question has low duration compared with B's detailed explanation. However, both A and B rank equally in terms of turn-taking. Thus, duration and turn-taking are two different measures used to enlighten the same phenomenon. Much small-group literature emphasizes group turn-taking behaviour rather than duration as a participation marker (Curhan and Pentland, 2007). Extending the findings to boards, evenness of turn-taking would indicate all directors have participated and signalled their views, even if briefly; this signals positive dynamics (Woolley et al., 2010). Uneven turn-taking may instead indicate individual dominance of discussion and be associated with poor board meeting dynamics.

We performed a detailed analysis by focusing on the main and top-3 contributors to a discussion (i.e. the participants taking the highest percentage of speaking time and turns in the discussion of each item). Our initial review indicated that each director's role in discussions varied with the agenda item before the board; thus, our analysis sought to establish whether the same or different actors contributed to discussions across the items/meetings. As a last step, we aggregated individual-level data (turn-taking and duration) to derive group-based participation structures for the observed discussions. To code the data, every recording of every agenda item was saved as a separate file. These files were coded using Observer XT via a binary code for each individual when they spoke (Noldus, 2009). The coding was exported from Observer XT into specialist software packages including "R" (R Development Core Team, 2011), Microsoft Excel and SPSS. Through an iterative process, we triangulated the observation data (duration

and turn-taking) with interviews and mini-survey data.

Step 4: Triangulation and Disconfirmation. The final stage involved re-examining the data for triangulation and/or disconfirmation of our key findings. This proceeded with a detailed review of all interview summaries and a review of board documents to clarify any remaining uncertainties. Our key results were also presented in feedback sessions to the boards to ensure face validity.

FINDINGS

The Board Context: Length and Timing of Meetings

Analysis commenced with a review of the context and arrangements of board meetings. Both boards followed recommendations on how to run meetings (AICD, 2012; Kiel and Nicholson, 2003); both Green and Red ran tightly ordered meetings and furnished directors with pre-circulated agendas and papers. Both boards' agendas contained standard items, such as the approval of previous meeting minutes, a CEO report and updates from their board committees. The meeting processes were aligned with normative prescriptions: the Chair opened meetings, signalled changes in agenda items and introduced topics. Both boards used 'action arising' lists to track execution of decisions made in prior meetings.

The inductive process revealed a number of differences in the meetings. A key variation between the boards was the timing of meetings. Green's board meetings were scheduled monthly on week-day evenings, while Red would normally schedule bi-monthly meetings on a Saturday during the day. The length of meetings also varied: at Green they lasted 1.5 - 2.5 hours (with no breaks), while at Red they lasted 6 - 8 hours (including two breaks for morning tea and lunch). Consequently, Red's board spent more than twice as much time meeting compared with Green's board.

At first this difference appeared innocuous, but as our understanding of the data and

context deepened we recognized this timing as a substantive difference. Both boards were dealing with issues that threatened their existence, but devoted a significantly different amount of time to discussions of issues with long-term implications to their survival. Particularly the Green board dealt with several important decisions in a shorter amount of time; this ‘speed trap’ represents one of the main pathology in organizations trying to make fast decisions (Okhuysen and Waller, 2002; Perlow et al., 2002). As we will discuss later, this seemingly minor difference played a major difference in understanding the differences between boards around director interactions, as well as the differences in directors’ perceptions of board effectiveness.

Agenda item differences

Table 2 reports analysis of the items discussed by the two boards. The table highlights three different classifications of items: board-related (e.g. defining the board calendar), strategic (e.g. CEO’s report on joint venture) and operational (e.g. reports from the sub-committee). Directors from both boards reported the importance of focusing on relevant issues, with directors at the different organisations even using the same language (lazy) to describe a resultant lack of engagement. For instance the CEO at Green commented how an agenda that was “*[an agenda that is]...too operational makes the board lazy [...] and it is not reaching its potential...*” Similarly at Red a director commented how “*...getting too operational information can lead a board getting lazy rather than [...] thinking about key issues...*”

Despite this common awareness, analysis revealed that Green’s board spent considerably more time on operational issues (e.g. the structuring of the board work or operational items like staffing contracts) compared with Red. Only 8 (out of 24) items were ‘strategic’ at Green, while the Red board had 13 strategic items over the three meetings. In addition, the discussion of strategic items at Green (Red) took 42% (58%) of the total time. Interview data corroborated this quantitative analysis. When probed on the nature of board

meetings and discussions, a typical Red response was “...we [the board members] help to do the strategic plan and do an implementation review...” whereas a typical Green director’s response was that “... [board meetings] are very operationally oriented. [...We] need more strategic thinking...” Clearly, the nature of boardroom discussions was substantially different, with Green spending less of their time on strategic issues during a time of profound change.

Insert Table 2 about here

Board climate

A third aspect of board meetings we considered was overall board climate (Payne et al., 2009). A review of the interview transcripts, matched with the video-observations, highlighted interesting differences along three dimensions: (i) the tone of the discussion (openness, frankness), (ii) the way of dealing with dissent within the board, and (iii) the formal or informal structure of director participation. Observation revealed the Red board appeared more cohesive with directors displaying a more shared awareness of their role and expectations surrounding how and when they would contribute to the board’s work. Interview data confirmed a higher tendency to consensus building among directors (in terms of expertise and contribution to the board). For instance, one Red director commented: “...*dissenting opinions are questioned and discussed. [There is an] opportunity to revisit issues...*” and that “...*board members see themselves as directors and act that way...*” In contrast, directors at Green indicated that director participation was not matching their expectations. For instance, one director commented on the contributions of colleague that “... *[named director] is too passive. [I] don’t know why [s]he is on board...*” while another observed a director as “...*reluctant to discuss strategy...*”

Finally, the observed boardroom processes reflected differences in the board climate.

Within the Green board, we observed a more disciplined system of ‘parliamentary procedure’ whereby participants contribute to the debate serially and often upon request of the Chair. The Red board instead was characterized by spontaneous interactions where directors would interject and contribute without explicit or solicited request.

The Underlying Structure of Director Interactions

Having established the overarching differences between boards, we turned to a rigorous and systematic analysis of boardroom interactions. Initial findings revealed substantial intra-board variation in interactions between items. Within each organization, some items appeared as long monologues while others appeared more like debates with even participation by many participants. Following approaches used in the communications literature (Acosta and Ward, 2011), we focused on three aspects of director interactions: duration (director speaking-time), turn-taking (director interjections) and participation rate.

Table 2 provides percentages of these measures for the 48 agenda items analysed. Duration patterns at the item level for the primary contributor were highly stable across meetings and boards: the mean duration for the primary contributor was 51% (sd=19%) for Green and 56% (sd=15%) for Red. For the top-3 contributors, the distributions revealed similar means. Green’s top-3 contributors took up to 84% (sd=20%) of speaking time compared with 85% (sd=9%) at Red. Figure 1 represents graphically how the two boards have similar patterns in the distribution of speaking time irrespective of how long the specific item lasted. In simple terms, at both boards one participant takes the lead in providing information to (or addresses the questions from) the rest of the board. Two other directors (i.e. the top 3) then join with the primary contributor to use most of the time available for discussion. This pattern was strikingly similar means for both boards.

Insert Figure 1 about here

We conducted a similar analysis on turn-taking. Despite the similarities in duration between boards, Table 2 and Figure 2 signal differences in turn taking behaviour between the two boards. At Green the top contributor took on average 37% (sd=11%) of turns compared with an average 32% (sd=5%) at Red. The top-3 turn-takers at Green averaged 77% (SD=20%) whereas Red's top-3 contributors averaged 70% (SD=7%). Differences are statistically significant ($p < .05$). Perhaps most importantly, the Red board's main contributors took a lower proportion of turns, thus allowing more room for other directors to participate.

Insert Figure 2 about here

Figure 3 provides an alternative way of understanding the differing levels of director participation at the boards by summarizing director silence during each item. Directors were more than twice as likely to remain silent during any item at Green (mean=34%, sd=25%) compared with Red (mean=15%, sd=17%). In 7 of the 24 items at Green more than half of the directors present did not speak. There was no item at Red where at least half of the directors spoke. Conversely, in 10 of the 24 items everyone present spoke at Red whereas everyone spoke for only 4 of the 24 items at Green.

Insert Figure 3 about here

Taken together, the distribution of speaking time (duration), turn-taking and director silence reveals some consistent interaction patterns as well as fundamental differences between the two boards. Discussions at Red were more inclusive than at Green. For example, an

examination of table 2 reveals the top-3 contributors spoke for the entire item at Green on three occasions (see items 8, 15 and 19) whereas this never occurred at Red (maximum contribution of the top-3 at Red is 90% of turns – item 31).

Individual Directors’ Contribution to Boardroom Discussions

While the preceding analysis reveals group-level differences and similarities between the boards, it does not reflect the dynamic nature of individual director contributions. These were not uniform, but varied with a participant’s specific role on the board (e.g. Chair of a committee) or with a participant’s specific expertise (a conclusion derived from observation and interview data). To better understand this phenomenon, we aggregated item data for each director to capture participant contributions across all meetings.

Figure 4 presents the frequency with which each participant featured as a primary contributor or top-3 contributor in terms of duration. Both boards have an individual who clearly contributes more than others in terms of speaking time: the Chair at Green is the primary contributor in 16 of 24 items while at Red the CEO is the primary contributor in 17 of 24 items. Other primary contributions came from individuals holding a specific position (e.g. the chairs of sub-committees discussing committee specific issues) or responsibility (e.g. they had been delegated a specific task). This makes intuitive sense as the individual with the best understanding of an issue would be reporting information to their colleagues.

Insert Figure 4 about here

The data reveal further evidence of a more inclusive discussion at Red compared with Green at the individual level. In the case of Green, the same five participants featured prominently among the top-3 contributors (i.e. Chair, CEO, Acting-CEO, GDir1 and GDir2).

The remaining four directors do not feature as leading contributors during the meeting. In contrast, all directors at Red (with the exception of R3 who was absent from the three meetings we observed) all demonstrated active participation in multiple items.

Analysis of the turn-taking distribution across the meetings corroborates the evidence provided by the duration analysis. Figure 5 shows that one participant in both Red and Green played a substantial role in turn-taking across the items and meetings. At Green, the Chair was a top-3 contributor in all items analysed while at Red the CEO was a top-3 contributor in 22 of the 24 items reviewed. A key difference in turn taking involved the *primary* turn-taker at each board, however. At Green, there was only one item where the Chair was not the primary turn-taker (23 of 24 items) while at Red the primary turn taker varied in one third of the items (i.e. Red’s CEO featured as the primary contributor in 16 of 24 items). Similarly, some four directors at Green showed marginal contributions when measured as turn-taking, whereas at Red all directors (with the exception of the non-attending director) featured regularly as top-3 turn-takers across the meetings we observed.

Insert Figure 5 about here

Figure 6 presents individual director silences during discussions of agenda items. The data strengthen earlier findings: Green’s directors were more likely to be silent compared with Red’s directors. At Green, all directors were silent for at least two items and more than half of all directors (5) were silent for 4 items or more, with G2 silent in 50% (or 12) of items at which s/he was present. In contrast, at Red only two directors were silent for two or more items, with R6 silent in 21% (or 5) of items.

Insert Figure 6 about here

Taken together, the three measures of director's contribution (duration, turn-taking and silence) provide a clear picture of the interactions at Green and Red. Both boards generally rely on a primary contributor (as measured by both duration and turns) when dealing with an agenda item. Further, most discussion sees the primary participant interacting with two others; these three contributors often accounting for more than 80% of the total discussion time in an item. While the dynamics of speaking duration appear quite similar, there was a distinctly different pattern of contribution when measured as turns taken. Across the 24 items five of Green directors featured recurrently as top contributors and four appear largely incidental in terms of turns taken and were often silent. In contrast, at Red different directors contributed to different items, displaying a pattern of rotating contribution during the meeting. These quantitative findings were borne out by our interview data. For instance when we asked participants to identify individuals with the most influence on the board, a typical response from a Red director was: *"...everyone plays a different role at different times on different topics...no one is overly dominating..."* (Red, Director).

Time to Contribute and Director Interactions

Given the similarities between our cases, the clear differences in interactions (i.e. turn taking dominance and silence) were at first puzzling. As analysis progressed, we noted the differences in meeting time length between boards and observed that Green's limited meeting time appeared to directly affect its interaction patterns. Green's Chair regularly interjected during discussions to keep items progressing and, as a consequence, the pattern of Green's Chair dominating turn-taking emerged.

A Green decision vignette (Figure 7) highlights the challenges posed by the limited time facing this board and the impact on director interactions. The item begins with the presentation

of verbal information delivered to supplement a previously circulated report. Time pressure emerges at around ¼ of the way through the item. After G1 begins questioning the CEO, the Chair interjects twice to keep the item moving (see paragraph 2, Figure 7). When another Director enquiry emerges, the Chair (along with another director) responds directly to a fellow board member’s question, not waiting for a management clarification as s/he seeks to keep the meeting moving (see paragraph 3, Figure 7). As discussions continue, the Chair interjects a third time to advance the agenda item before moving to item finalization.

Insert Figure 7 about here

While at several points in the vignette the Chair of Green perceives the meeting moving off track and interjects to bring it back to purpose, it is not clear that other participants agree. For instance, the CEO continues to discuss an issue with G5 following an interjection. Observation also revealed that the Chair (and to a lesser degree G1) interjected to clarify issues at several points; the Chair and G1 appear well informed and sought to keep the meeting moving rather than allow an emergent discussion with a broader group of directors and management. This item was typical, in that the Chair of Green appears to be trying to ensure a quick transfer of information, interjecting frequently to ensure this occurred. This was in contrast to Red, where the Chair (or CEO) interjected far less often and where board discussions were far less disciplined, wide ranging and involved more participants.

Our interview data corroborated these observations on the differences between the meetings and the link between interaction patterns and time. At Red “...*there is time to fully discuss and consider issues...*” (Red, Director) whereas at Green directors thought that “...*we should dedicate more time to strategic issues and put them at the beginning of meeting agendas...*” (Green, Director).

Director Interactions and Perceptions of Board Effectiveness

Our final set of findings aims to shed light on the relationship between the differences in director interactions we document and the boards’ work. Interview data revealed clear differences in participants’ perceptions of board effectiveness. Some Green board members reported that meetings could provide greater opportunities to participate: *“The board meetings are more like an info session rather than a decision frame ... [could be better] discussion about things.”*

In contrast, Red’s directors were generally satisfied with their meetings, although there was a minority of participants who felt that discussions could be shortened. In particular, and in contrast to Green, Red’s directors reported their meetings allowed sufficient interaction: *“There is a [good] balance between free flow of thoughts and [the] need to stick to time”* such that *“...discussion[s are allowed] to flow...”*

These general qualitative views of the board’s performance in the meeting were triangulated with director ratings of the quality of both the each overall meeting and each agenda item. At the conclusion of each meeting, we requested each director to rate the quality of the meeting on a scale of 1 to 10 (see Appendix A). We collected 22 usable responses from Green and 15 usable responses from Red across the three meetings. Figure 8 presents these ratings. Red directors reported greater satisfaction with overall meeting quality (mean=8.6; SD=5) compared with Green directors (mean=6.5; SD=1.0), a statistically significant difference in perceived quality (p<.01).

Insert Figure 8 about here

Figure 9 reports director ratings of the quality of discussion at the item level. The mean item rating at Red (3.80) was higher than at Green (3.38) (p<.05). We noted, however, that the

main source of difference is associated with the type of agenda items. Green’s ratings of operational items were on par with Red; it was in the board related and strategic agenda items that differences in perceptions of meeting quality emerged.

Insert Figure 9 about here

In summary, the data highlighted that boardroom discussions at Red was more inclusive than at Green. Also, we noted that the contextual aspects of the boards appeared related to these differing interaction patterns. *First*, the timing and length (shorter and more frequent meetings at Green) resulted in greater time pressure at Green. *Second*, the Red board placed more emphasis on strategic issues compared with Green. *Third*, the boardroom climate differed between the two boards: directors at Red felt more engaged, collegial and aware of their role(s). Last, we report that different interaction patterns were associated with different levels of perceived effectiveness at both the meeting and agenda item levels.

DISCUSSION

This study provides detailed evidence on boardroom interactions gained through unfettered access to the back box of boards – the board meeting. In so doing, it addresses calls from both practitioners and academics to better understand director behaviour and board dynamics (Huse, 2005). We provide unique data and analysis that demonstrate director contributions to boardroom discussions, while often patterned, are multi-dimensional and dynamic. More specifically, by measuring speaking time, turn-taking and silence as indicators of director contributions, we discern substantial differences in board dynamics in the two boards we studied.

These differences were corroborated by data collected from director interviews and

director ratings of discussion quality. The board with higher ratings had directors who contributed more evenly over the meeting, had fewer silent directors and regularly shared the dominance of turn taking between items. The cases we present also suggest that board context matters; the differing patterns of interaction are embedded within a broader set of governance processes and procedures that shape the opportunity for the directors to perform their roles. How the board arranges its meeting (i.e. length and timing) as well as its focus on strategic or operational agenda items matter. Taken together, this paper provides further evidence that director interactions are measurable, respond to differences in meeting arrangements and, importantly, are associated with director perceptions of board effectiveness. In the following sections we detail how these results may be useful to future research efforts.

Measuring Boardroom Interactions: Information Provision and Questioning Behaviour

Since there are few direct studies of board and director dynamics, a challenge for all researchers interested in entering the boardroom is determining how to operationalize and measure phenomena of interest. By providing multiple measures of director participation, we hope to have highlighted the multidimensional nature of boardroom dynamics and the different conclusions that result depending on the operationalization and measurement of director participation.

The first insight is that observing director interactions reveals the dual nature of boards' work. For instance, as figures 1 - 3 show, different patterns of boardroom interaction emerge depending on whether we measure speaking-time (duration) rather than turn-taking or director silence. In our cases, both boards require the input of a limited number of board meeting participants: in Red and Green a single participant accounted for around half of all speaking time in any one item, and the top-3 contributors accounted for more than 80% of the speaking time. This pattern is highly stable at an agenda item level across boards and meetings,

suggesting the transfer of information in both organisations was quite similar; it was dominated by a small coalition of directors and often an individual. Given we attempted to match the boards, companies and their contexts, this was not unexpected.

These findings illustrate how boards deal with information asymmetry reduction that cannot be pre-empted prior to board meetings. The very nature of the board makes it different from other workgroups because of the (lower) frequency of the meetings and the fact that directors are not necessarily full-time employees, hence lacking relevant information about the organization. In order to overcome inherent information asymmetry, one participant provides most of the input and gains a central position in the discussion of the specific agenda item. Then a small number of directors will share the remaining discussion time debating the issue with the main contributor.

However, when participation was measured as either turn-taking or silence, clear distinctions between the boards emerged. The distribution of turns reveals directors' questioning and enquiring during an agenda item: any single meeting participant accounted for fewer of the total turns, as did the contribution of the top-3 turn-takers. Together with the analysis of director silence, the findings demonstrate marked differences between the two boards: despite being matched at the company and board level, directors' participation at Red was far more inclusive and active when compared with Green across meetings.

These findings are particularly relevant to boards as unique types of workgroups: while the duration data reveal how informed/knowledgeable directors share information with the less informed ones (i.e. the non-executives), turns and silence data reveal how directors interact and question before taking any decision. Whilst duration patterns are stable across boards, meetings and items, patterns of turn-taking vary and lead to different perceptions of board functioning.

Another key feature of these patterns is their dynamism across items as *differing combinations of participants* take the lead according to their role(s) and/or expertise. We found

that *different* directors had more or less influence on each item. This is an important step towards a fuller understanding and application of any theory of corporate governance. Consider, for instance, the implication for agency logic applied to boards of directors. Since a manager or director may be conflicted (or possess knowledge) on one issue but not on another, applying agency theory would require us to understand which *specific* participants have influence on which *specific* item. Thus, a director's independence (skill) can change with the context of item before the board. Given participation varies by item, the variance in director and manager participation may provide much deeper insights into how best to reduce information asymmetries and agency costs. This process is unobservable using approaches relying on archival, individual data (e.g. independence status) to produce an average group measure (e.g. proportion of independent directors) that is analysed against a generic outcome (e.g. board performance). Instead, the dynamic nature of participation in the boardroom suggests we need to identify the specific issue (e.g. a takeover that would benefit managers) and then understand *who drove the boardroom discussion around that issue* (e.g. who were the top-3 contributors for that issue) if we are to overcome issues of measurement error present in the field (Dalton and Dalton, 2011).

Directors' Participation and Board Effectiveness

Our results shed light on the mechanisms that emerging governance literature has identified as potential sources of variation in board functioning, such as group polarization (Zhu, 2013), pluralistic ignorance (Westphal and Bednar, 2005) or coalition building (Cronin et al., 2011). Instances where directors contribute less, because of the presence of a (group of) dominant director represent clear markers of the positive/negative dynamics that the two boards develop: the domination of turn-taking, the formation of groups in the discussion of items, and the recurrent disengagement of (silent) director all point to the risk of enhancing information

asymmetry and cognitive distance among board members.

After understanding the dynamism of interactions, we were able to isolate relationships between interaction patterns and aspects of (perceived) board effectiveness. At a broad level, we provide clear, triangulated evidence of differences in director interactions within Red and Green's boardrooms that were associated with perceptions of effectiveness. Interview data revealed participants from Red viewed their meetings as (more) effective compared with Green, a finding supported by quantitative analysis of perceptual measures (see Figure 8). These perceptions, combined with the coders' assessments and meeting ratings provide insight into the importance of evenness of turn-taking to some (at least proximal) measures of board effectiveness. Our findings suggest that evenness of turn-taking may provide a better measure of whether board members have an appropriate opportunity to question and monitor management than the classic 'board independence ratio'. Since both our boards had a preponderance of non-executive directors that received significant amounts of pre-meeting briefing materials, we expected similar levels of participation and involvement. This was not the case. Participants from Green reported that meetings felt like an arena to share information while Red's participants saw the meeting as a key arena in which to shape strategy. The data show a clear association between the recurrent silence of a proportion of the board, lower participant perceptions of performance and a difference in board climate noticeable to an external observer.

The Importance of Board Context and Arrangements

Our third contribution lies in highlighting the importance of board context or arrangements. Time is an important factor in-group performance that has been traditionally studied as a source of longitudinal group development process (e.g. Gersick, 1989) whereby time is used as a method of structuring the group discussion. Groups under greater time pressure provide lower quality outcomes across a range of tasks (Waller et al., 2002). With less time available for

meeting, Green struggled to assess all the important issues before it. It may be that the Green board did not have enough time to hit the equilibrium point required for action, whereas for Red this was not an issue. While we cannot exclude Chair style as a contributor, our analysis clearly indicates that board members' awareness of the time pressure played a great role in ensuring (hampering) discussion inclusiveness (cf. Gersick, 1988).

Another important source of difference between the boards is the nature of the items on their respective board agendas. Green spent less of its time on strategic issues (42% versus Red's 71%) and far more on board issues (36% versus 12%). Our quantitative and interview data suggest an association between the nature of items and perception of board effectiveness (see Figure 9). Some of the Green directors felt that the emphasis on operational rather than on strategic items hampered the overall board's ability to contribute in addressing the (timely) issues the organization was facing (e.g. survival). These findings address Ocasio's call (1997) for more direct evidence around directors' attention and focus in task execution. While directors need to feel empowered and discuss relevant issues to which they can contribute to, a potential way to sterilize their contribution (hence the lack of participation and silence) is through adding a series of operational items that do not require too much input.

A final contextual element that seems to be associated with perceived effectiveness is board climate. The discussions at the two boards differed, with Green showing more vertical structuring and a system of parliamentary rotation, more rigid leadership roles, and less even sharing of air-time in meetings (Isenberg, 1981). The Green board Chair often interjected when the conversation appeared to be straying from the strict focus of the discussion. Instead, the Red Chair would rarely interject and allowed other participants to contribute. As a result, the board of Red had a pattern of more even turn-taking and more inclusive discussion across the meetings. The interview data offered further insights into this largely under-explored area of board research: they show ways in which directors could be 'sterilized' or limited in their

expected contribution regardless of the composition and skills they have. This concept is not new – Mace (1971) labelled boards as ‘rubber stamps’ – and we offer preliminary evidence of ways in which this is likely to occur.

CONCLUSIONS AND LIMITATIONS

Since boards can only legally execute their power as a group, we contend that understanding boardroom interactions and director participation is fundamental to effective governance. Entering the boardroom and studying director interactions allowed us to highlight that this process is measurable, multidimensional and dynamic. Using video-observations of board meetings, we provide evidence that inclusiveness and evenness of the contribution are associated with perceived board effectiveness. Also, we highlight how meeting arrangements and context (i.e. timing, board climate and the nature of items discussed) appears to affect the inner dynamics.

Our study comes with a number of limitations: this study focused on board meetings as the main arena where boards make decisions and directors discharge their duties. Given that the board decision process begins outside the board meeting our results need to be treated with some care. The chosen research design does not allow to fully appreciating the extent to which out-of-board contacts affect decision-making and director interaction. Whilst we probed directors on this issue by asking them about the relevance and occurrence of out-of-board contacts and they described that these contacts were fairly limited and marginal, we were not able to fully ascertain their influence on the observed boardroom dynamics. Future research could examine in more depth whether and how director interaction in other venues (e.g. committee meetings or informal mechanisms) affects decision-making and director behaviours during board meetings.

Second, we emphasized three key dimensions of boardroom interactions (speaking-

time, turn-taking, silence) and while our qualitative data corroborate the significance of the constructs, we did not directly investigate other elements of interaction such as the quality of board members' contributions (e.g. the content), ways of expressing views (Samra-Fredericks, 2000), nonverbal behaviour (Brundin and Nordqvist, 2008) or individual directors' cognitive styles. These would represent a great step towards understanding how interactions shape the discourse and decision-making in a more direct way.

Third, our choice to study two comparable corporations in Australia enabled us to control for environmental differences. Yet, our findings may not be generalizable across other times and contexts due to the specificities of the two companies. In fact, director interactions we studied might have been the outcome of uncontrolled or unmeasured variables, such as the level of environmental turbulence both boards faced, their stage in the organizational life-cycle (Bonn and Pettigrew, 2009), the Australian context or director characteristics. We are aware that organizational-level or industry features may affect boardroom dynamics and different types of corporation could possibly have different routines or structure of interactions. Given these issues, further studies are warranted to gauge the generalizability of our findings. We hope that future research may uncover patterns of interaction associated with effective boards. While this is a challenging research agenda, it is one worth pursuing.

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Table 1: Overview of Videotaped Board Meetings

Board	Meeting	Directors participation: absences and teleconference	Average Attendance Rate per Item	No. of Agenda items	Prepared papers	Meeting length	Month
Green	1	0 absent	100%	7 agenda items	Y	1h 30m	November 2010
	2	2 absent for some items 1 teleconference for some items	91%	7 agenda items	Y	2h 30m	February 2011
	3	1 absent; 1 teleconference	90%	10 agenda items	Y	2h 15m	March 2011
Red	1	2 absent; 1 teleconference	78%	5 agenda items	Y	4h 20m	November 2010
	2	1 absent for entire meeting 3 absent for some items 1 teleconference for some items	72%	11 agenda items	Y	4h 20m	February 2011
	3	2 absent	78%	8 agenda items	Y	5h 25m	April 2011

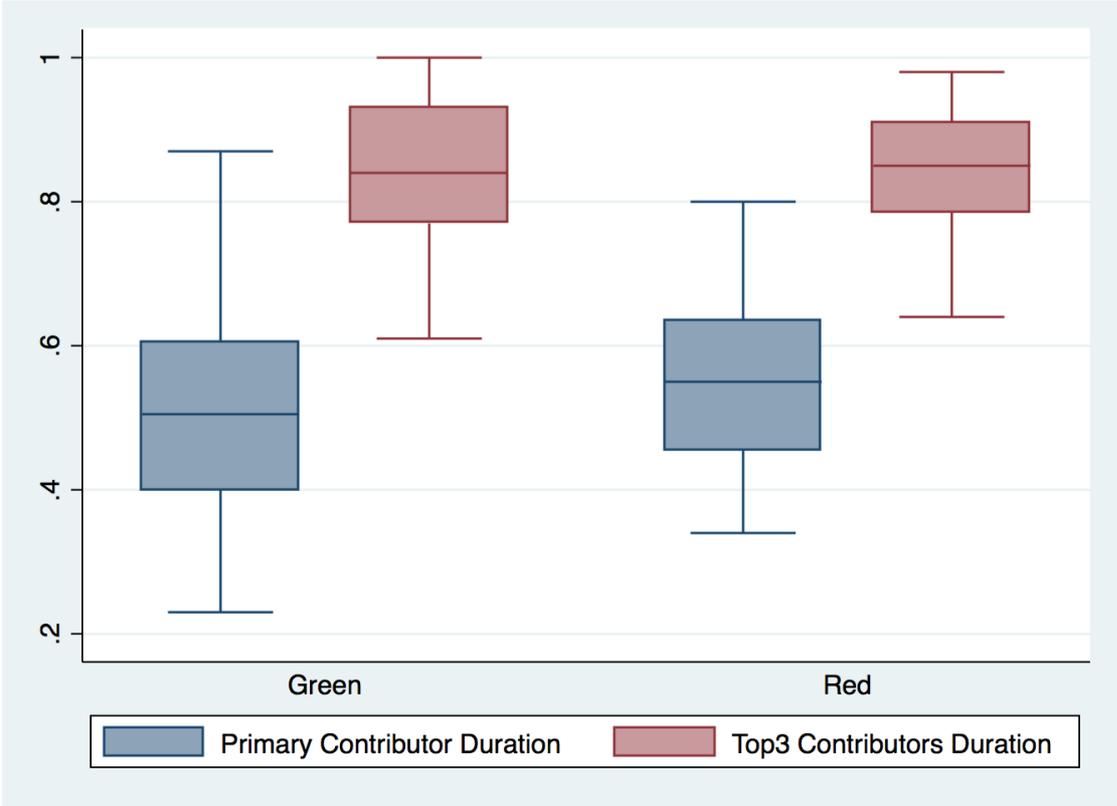
Table 2 (Panel A – Green Board): Description of timing and nature of agenda items, directors’ attendance, turn-taking and speaking time

Item	Meeting	Duration (min:sec)	Item type	% silent director	First contributor Duration (% time)	Top-3 contributor Duration (% time)	First contributor (% turns)	Top-3 contributor (% turns)
1	1	4:30	board	67	55	93	32	88
2	1	2:40	board	60	87	99	50	88
3	1	7:15	board	50	38	88	44	89
4	1	14:15	board	0	53	77	39	70
5	1	12:38	strategic	30	49	83	21	59
6	1	16:00	board	60	41	84	43	76
7	1	11:40	strategic	40	52	85	39	68
8	2	1:11	board	80	69	100	57	100
9	2	12:25	board	0	64	83	38	64
10	2	18:45	non-operat	22	43	67	43	73
11	2	24:22	non-operat	30	40	76	33	60
12	2	21:00	strategic	11	54	88	34	79
13	2	17:00	strategic	11	35	77	34	71
14	2	12:55	strategic	44	40	77	28	60
15	3	6:00	strategic	25	52	91	38	100
16	3	23:15	strategic	0	40	82	37	71
17	3	4:10	non-operat	78	57	84	39	83
18	3	1:53	board	56	76	99	33	92
19	3	4:15	non-operat	56	77	100	43	100
20	3	8:50	non-operat	33	74	94	34	78
21	3	15:55	strategic	0	40	66	28	55
22	3	27:40	board	13	30	79	29	77
23	3	8:50	board	25	42	93	43	82
24	3	8:10	board	25	23	61	26	60
Avg (sd)				34	51(19)	84 (20)	37 (8)	77 (12)

Table 2 (Panel A – Red Board): Description of timing and nature of agenda items, directors’ attendance, turn-taking and speaking time

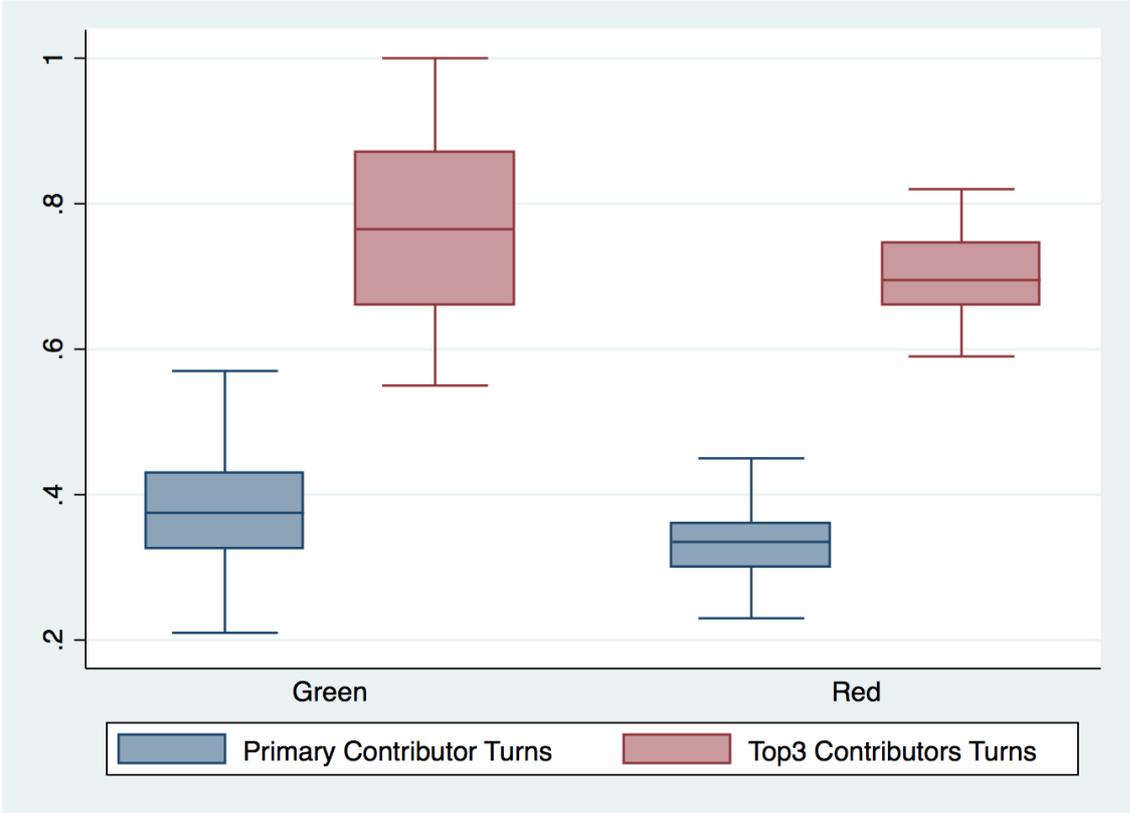
Item	Meeting	Duration (min:sec)	Item type	% silent director	First contributor Duration (% time)	Top-3 contributor Duration (% time)	First contributor (% turns)	Top-3 contributor (% turns)
25	1	10:10	board	17	50	90	35	75
26	1	80:00	strategic	0	63	87	36	75
27	1	21:50	strategic	0	34	70	29	64
28	1	29:30	board	0	44	78	31	67
29	1	29:30	non-operat	0	57	85	29	68
30	2	58:15	strategic	0	68	85	32	65
31	2	10:50	strategic	50	91	98	45	90
32	2	8:20	strategic	50	45	85	34	75
33	2	10:50	strategic	0	56	84	23	60
34	2	11:40	non-operat	33	46	79	33	68
35	2	15:30	strategic	0	76	92	36	71
36	2	5:45	non-operat	25	78	93	35	74
37	2	24:25	non-operat	14	64	91	39	76
38	2	13:55	non-operat	14	50	92	39	82
39	2	37:25	strategic	14	37	80	34	69
40	2	5:15	non-operat	50	59	98	40	73
41	3	116:57	strategic	0	80	91	36	66
42	3	13:00	strategic	22	56	89	38	70
43	3	42:55	strategic	11	45	78	32	59
44	3	36:25	board	0	35	64	23	59
45	3	28:00	strategic	0	54	84	26	66
46	3	32:55	strategic	13	59	77	33	66
47	3	4:55	board	13	51	74	26	74
48	3	34:40	non-operat	25	53	91	32	72
Avg (sd)				15	56 (15)	85 (9)	32 (5)	69 (7)

Figure 1: Distribution of speaking time at Green and Red



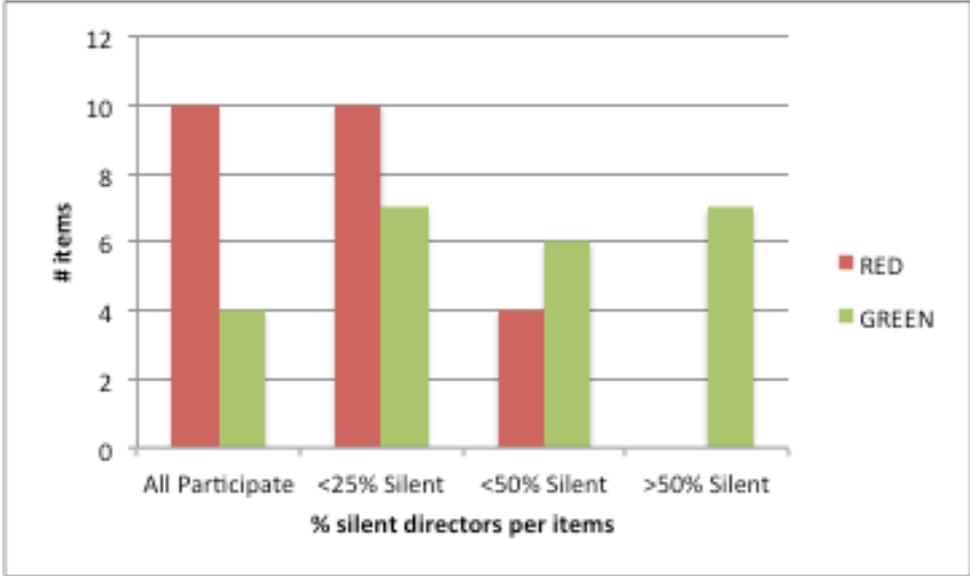
The diagrams summarize the distribution of speaking time at Green and Red across the full 48 items (24 at each organization). The patterns for the two organizations are strikingly similar: the primary contributor (speaking) most takes up to 51% (56%) of the total time at Green (Red). Q1 and Q3 figures show similar patterns although Red had less variation. Figures for the Top3 contributors (the total time taken by the first, second and third longest speaking directors), the observations show very consistent patterns: at Green (Red) 84% (85%) of the total speaking time is taken by the Top3 contributors. This suggests that the majority of the speaking time during discussions of agenda items is taken by 3 directors.

Figure 2: Distribution of turn-taking at Green and Red



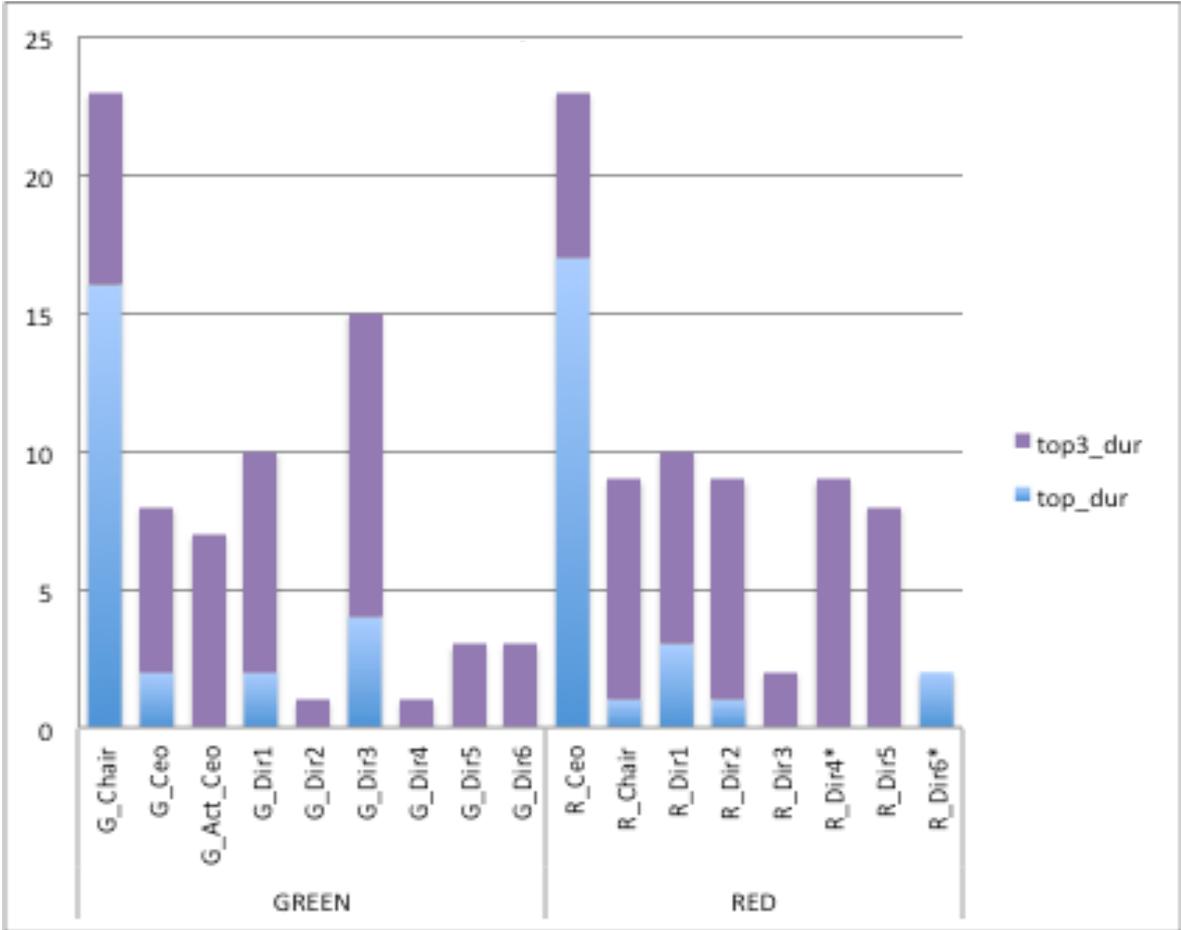
The diagrams summarize the distribution of turns at Green and Red across the full 48 items (24 at each organization). The patterns for the two organizations are different: the primary contributor (single director) at Green (Red) takes up to 37% (32%) of the total turns. When looking at the Top3 contributors (the total turns taken by the first, second and third directors taking more turns), again the results show different patterns: at Green (Red) 77% (69%) of the total turns are taken by the Top3 contributors. This suggests that at Green the interactions tend to be limited to 3 directors only, while at Red there is more room for higher involvement of all participants. Also, in some instances three directors at Green take all the turns, while this never happens at Red, indicating a consistently larger participation of directors in the discussion of agenda items at Red.

Figure 3: Directors not participating to the discussion



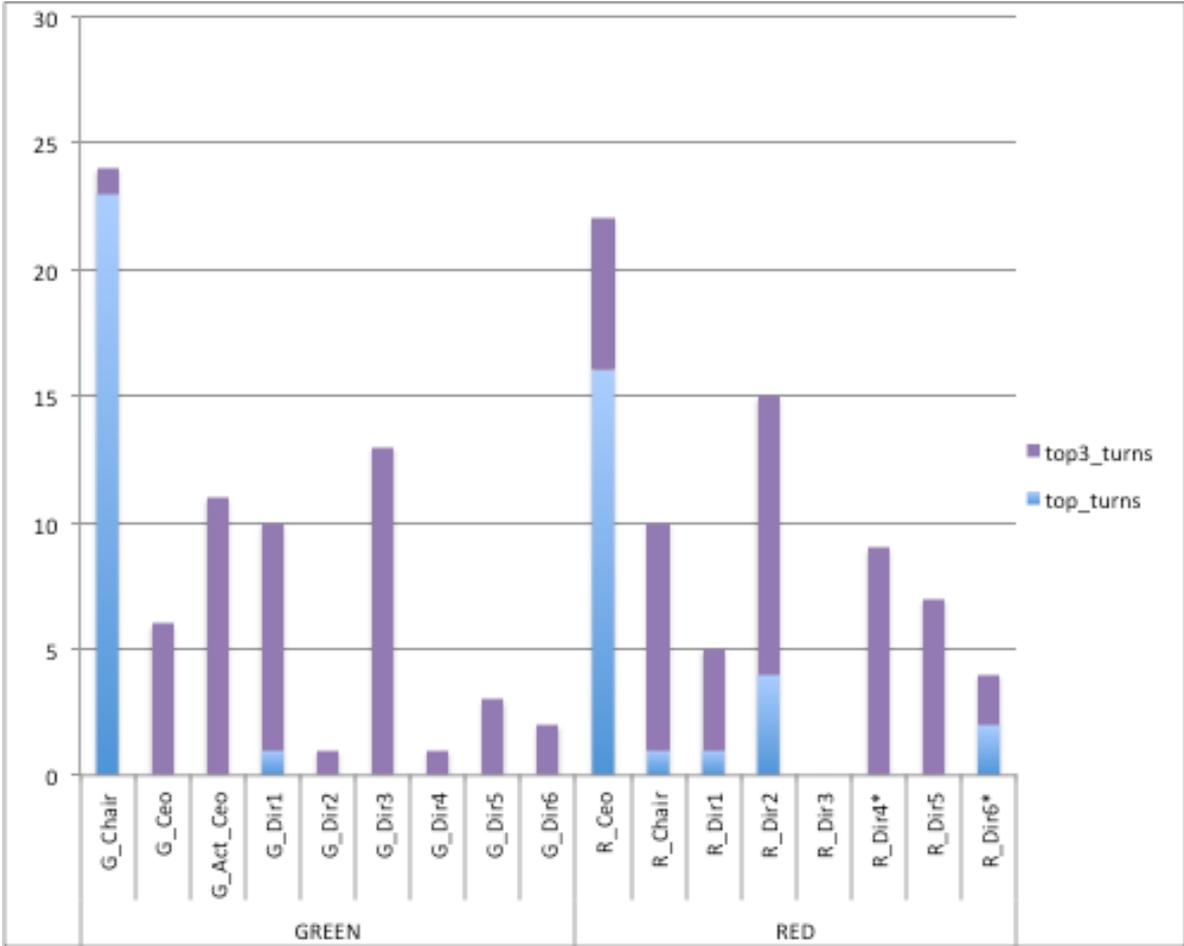
This figure illustrates the different patterns of ‘silent’ directors at Green and Red. On the x-axis we plot the % of non-speaking directors per agenda item (out of the total number of attendees) and on the y-axis we indicate the number of items. The figure shows that participants behaved differently in the two boards: directors at RED are more likely to contribute than at GREEN. On average - in all items 15% (34%) of directors would be silent at RED (GREEN). More importantly, in 10 items all RED directors spoke, compared to only four such instances at GREEN, while in 7 items more than 50% of directors at GREEN did not join the discussion.

Figure 4: Directors' contribution to the discussion (duration)



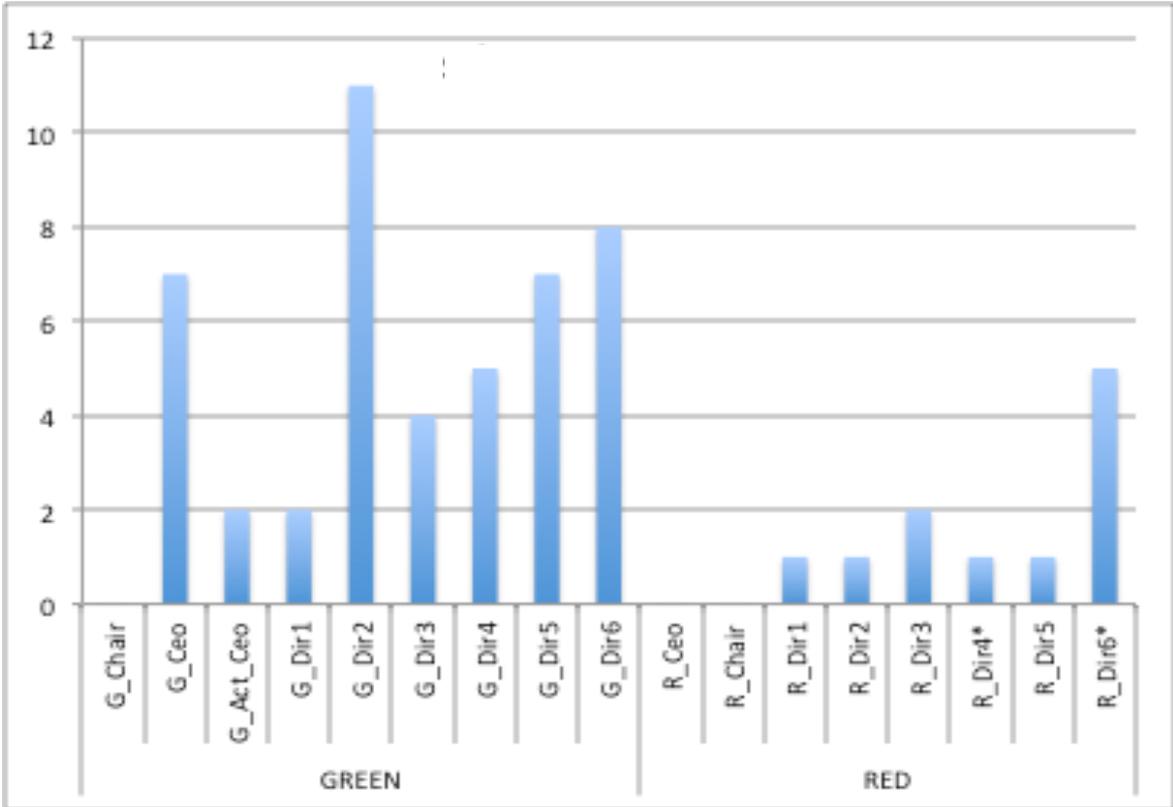
This figure illustrates the different patterns of speaking time (duration) based on observations on individual directors at Green and Red. On the x-axis we plot the various directors of both boards and on the y-axis we indicate the number of items in which that board member featured as the primary contributor (in blue colour) or as one of the top-3 contributors (in purple) in terms of duration. Please note that the height of the columns indicates the total number of times in which an individual director featured as one of the top3 contributors in terms of duration: the columns are split into two colours, where the blue indicates the number of instances when the director was the main (duration) contributor, whereas purple indicates instances when the director featured as one of the top-3 (duration) contributors. As a final clarifying remark, a director featuring as a primary contributor would also be included as one of the top3- contributors. The figure indicates that the two boards have a dominant director; beyond this, there are significant differences: four of the Green directors rarely feature as main contributors, while at Red there is a more even distribution in terms of participation.

Figure 5: Directors' contribution to the discussion (turn-taking)



This figure illustrates the different patterns of turn-taking based on observations on individual directors at Green and Red. On the x-axis we plot the various directors of both boards and on the y-axis we indicate the number of items in which that board member featured as the primary contributor (in blue) or as one of the other two individuals making up the top-3 contributors (in purple). We measure contribution as turns taken during discussion of the item. The height each column indicates the total number of times the director was a top3 contributors in terms of turns. This figure shows the Green Chair is the primary turn taker in all but one item; at Red, the main turn taker was not the same individual (the CEO) in one-third of the items. Similarly, four directors at Green take a lead in very few items, while at Red directors tend to ‘rotate’ being a significant contributor.

Figure 6: Directors' contribution to the discussion (silent directors)



This figure illustrates the different patterns of participation per director at Green and Red. On the x-axis we plot the various individual directors of both boards and on the y-axis we indicate the number of items in which that board member was silent. As the figure clearly shows, directors sitting on the Green board tend to remain silent in considerably higher number of instances than Red directors.

Figure 7: Vignette of a single item decision process at Green

Item: Strategic Initiative Update

After an introduction by the Chair, the Chief Executive begins the item by presenting the report. This is clearly an information sharing stage as the Chief Executive outlines the major meetings with stakeholders that have taken place and clarifies and elaborates on the information in the papers before the board. It is clear that the directors are following a pre-circulated paper on the agenda item.

At around one-quarter of the way into the meeting, the Chief Executive pauses and asks if any directors have a question. GDir5 seeks clarification on a critical element of the initiative. What follows is a clarification, mainly by the Chair and another director (GDir1); the Chief Executive also contributes. This clarification and discussion continues for a short time – a couple of minutes – before the Chair interjects to facilitate the meeting back on track. The Chief Executive ignores the interjection and continues to clarify the issue with GDir5 for a short period. The Chair interjects again to move the meeting forward.

The Chair reads the body language of GDir2 and asks if the director has a question. GDir2 asks about an aspect of the paper, trying to get clarity on the wording of the issue. GDir2 directly questions GDir1 and the Chief Executive further. At this point the Chair and GDir1 begin to assist the Chief Executive and continue to clarify the wording for GDir2 until the director is aware of what the precise wording means.

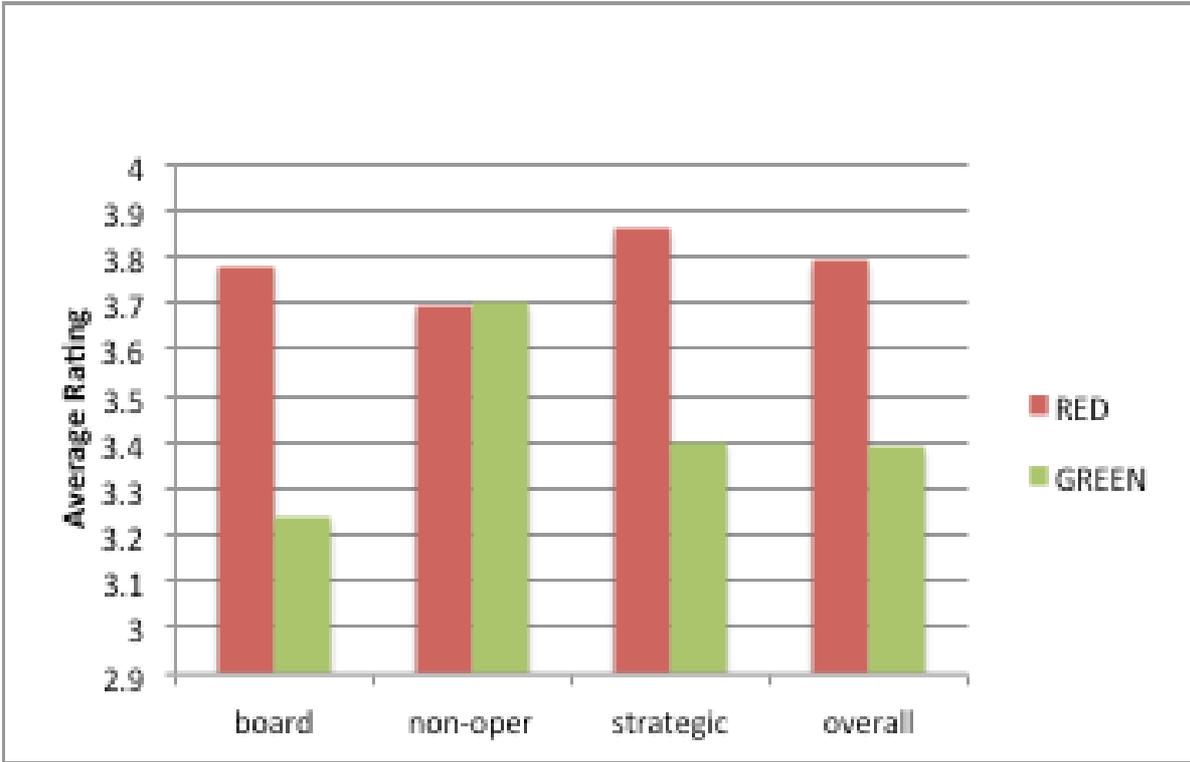
At this point the Chair interjects again to bring the meeting back on track by asking the Chief Executive to continue the report. GDir4 asks a question and this is quickly answered and not really connected to the conversation taking place in the boardroom. The report finalises and there is a rundown on the planned activities before the Chair moves to take the meeting to the next item.

Figure 8: Directors satisfaction with quality of board meetings



This diagram illustrates the distribution of directors’ responses to the question ‘On a scale from 1 (low) to 10 (high), how would you value the quality of the board meeting?’ While at Red directors were consistently rating the quality of the meeting between 8 and 9 (avg 8.6; sd 0.5), Green directors' ratings were lower and more dispersed (avg 6.5; sd 1.1). The difference in means is statistically significant ($p < .01$).

Figure 9: Directors satisfaction with quality of discussion of agenda items (out of 5)



This diagram illustrates mean directors' ratings of the quality of discussion of the just completed agenda item (scaled from 1 (low) to 5 (high)) by board and agenda item type. Overall, Red rated the quality of its discussions noticeably higher (Red mean = 3.79 compared with Green mean = 3.39). The differences in ratings were evident for both strategic issues and board-focused issues but there were no noticeable differences in ratings of operational issues. Further, while Red's ratings were relatively stable around 3.7-3.8 for all three categories of item, Green's ratings varied considerably between the categories (3.2-3.7).

APPENDIX A: Mini-survey administered at the end of the board meeting.

Name: _____

Phone number: _____

About today's board meeting

1. On a scale of 1 to 7 where 1 is not at all prepared and 7 is very prepared, how prepared were you for this meeting? (Please circle your response)

Not at all prepared	1	2	3	4	5	6	7	Very prepared
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2. On a scale of 1 to 7 where 1 is not at all engaged and 7 is highly engaged, how engaged were you during this meeting? (Please circle your response)

Highly engaged	1	2	3	4	5	6	7	Not at all engaged
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3. On a scale of 1 to 10 where 1 is very low and 10 is very high, how would you rate the quality of this board meeting?

Very low	1	2	3	4	5	6	7	8	9	10	Very high
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4. Did you contact (e.g., phone, email, meet in person) anyone about the issues discussed on today's meeting, prior to the meeting? And how much contact did you have? (Please answer all that apply)

	A little	1	2	3	4	5	A lot
<input type="checkbox"/> Yes - management	1	2	3	4	5		
<input type="checkbox"/> Yes - fellow board member(s)	1	2	3	4	5		
<input type="checkbox"/> Yes - others from outside Health Workforce	1	2	3	4	5		
<input type="checkbox"/> No - did not contact anyone	1	2	3	4	5		

5. Was there anything unusual about this meeting?

APPENDIX B: Mini-survey administered at the end of each agenda item.

Initials: _____

Item number: _____

About the last Agenda item

Thinking about the agenda item that has just been discussed, on a scale of 1 to 5 where 1 is very low and 5 is very high, how would you rate the following: (Please circle one number for each item)

	Very low	Low	Average	High	Very high
1. Quality of the discussion	1	2	3	4	5
2. Importance of the item	1	2	3	4	5
3. Your level of engagement	1	2	3	4	5
4. Quality of the outcome	1	2	3	4	5

5. How aware of this issue were you? (please mark one answer only)

1	2	3	4	5
Not at all aware, it was an unexpected item	I was made aware of this issue informally e.g., the chair contacted me	I was made aware through formal channels e.g., in the board papers, agenda	I was aware as we had discussed this issue at the last meeting	I was aware as we have been working on this issue for some time

6. I was satisfied with my contribution to the discussion on this item

- Yes
- No (tick all that apply)
 - I was **under-prepared** to discuss this item
 - The issue was **outside my area of expertise**
 - The **board process** inhibited my contribution
 - Other (please explain) _____