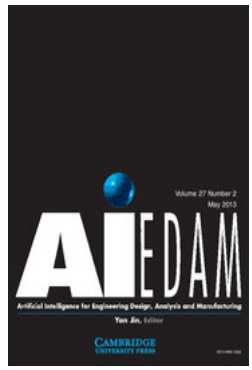

Design as communication in microstrategy: Strategic sensemaking and sensegiving mediated through designed artifacts

John Stevens

Artificial Intelligence for Engineering Design, Analysis and Manufacturing / Volume 27 / Special Issue 02 / May 2013, pp 133 - 142
DOI: 10.1017/S0890060413000036, Published online: 18 April 2013

Artificial Intelligence for Engineering Design, Analysis and Manufacturing (2013), *27*, 133–142.

doi:10.1017/S0890060413000036

Design as communication in microstrategy: Strategic sensemaking and sensegiving mediated through designed artifacts

JOHN STEVENS

School of Design, Northumbria University, City Campus East, Newcastle Upon Tyne, United Kingdom

(Received September 30, 2011; Accepted February 20, 2012)

Abstract

This paper relates key concepts of strategic cognition in microstrategy to design practice. It considers the potential roles of designers' output in strategic sensemaking and sensegiving. Designed artifacts play well-known roles as communication media; sketches, renderings, models, and prototypes are created to explore and test possibilities and to communicate these options within and outside the design team. This article draws on design and strategy literature to propose that designed artifacts can and do play a role as symbolic communication resources in sensemaking and sensegiving activities that impact strategic decision making and change. Extracts from interviews with three designers serve as illustrative examples. This article is a call for further empirical exploration of such a complex subject.

Keywords: Communication; Design; Sensegiving; Sensemaking; Strategy

1. INTRODUCTION

The design process relies heavily on designed artifacts themselves as communication media (Carlile, 2002; Eckert & Boujut, 2003; Crilly et al., 2008); sketches, renderings, models, and prototypes are created not only to explore and test possibilities but also to communicate these options within and outside the design team. Of course, senior managers and executives are often involved in approving design output, particularly for important new products. However, there may be more subtle, less documented exchanges mediated through design at such a senior level, having powerful and far-reaching influence.

The received view of the typical design process has designers responding to a brief or problem statement, which attempts to define the requirements of the output. A large body of research has established many valuable descriptive theories and models around this complex process. There is also a body of work examining the artifact's role as a communication medium between designer and consumer (for a summary, see Crilly et al., 2008). This article is not concerned with these topics but seeks to complement them, exploring how designers' output might play a role in microstrategy activity; it proposes a connection between design practice and microstrategy, with respect to sensemaking in particular.

Much strategy research has focused on leadership actions and decisions and macrolevel behaviors, but there is recent recognition of the impact of day-to-day activities of middle- and lower-echelon employees on strategic decisions and change. Johnson et al. (2003, p. 3) argued for "a shift in the strategy debate towards a micro perspective on strategy and strategizing. More specifically . . . for an emphasis on the detailed processes and practices which constitute the day-to-day activities of organisational life and which relate to strategic outcomes"—what they term an *activity-based view*. Much work has been done since this call, with growing body of literature termed *microstrategy*, *strategy as practice*, and *behavioral strategy*.[1]

In this vein, I propose a conceptual synthesis, namely, that designed artifacts can and do play a role as symbolic resources in sensemaking and sensegiving activities that impact strategic decision making and change. This claim is based mainly on existing literature of sensemaking and microstrategy, relevant to design because it helps to position the lit-

Requests for reprints to: John Stevens, School of Design, Northumbria University, City Campus East, Newcastle Upon Tyne NE1 8ST, United Kingdom. E-mail: john.stevens@northumbria.ac.uk

[1] The domains of microstrategy, strategy as practice, and behavioural strategy are very similar, and for some authors interchangeable. For this article I use the term microstrategy to denote the general subject domain, including all three.

tle-documented mediating role of designed artifacts in formulation and communication of strategy.

In Section 2, the literature of microstrategy is introduced, then sensemaking and related concepts. The nature of design as sensemaking is discussed, then design's role in strategy more generally. I next discuss designed artifacts as boundary objects and as symbolic resources for strategic sensemaking and sensegiving. Extracts from interviews with three designers are presented in Section 3 as illustrative examples of design contributions being made in sensemaking and sensegiving activities at various levels. Section 4 contains discussion of the claims in this Introduction, and Section 5 provides a conclusion.

2. BACKGROUND

2.1. Microstrategy themes

The strategy as science approach that dominated the 20th century saw strategy as purely a matter of analysis and planning, but now it is largely discredited. Mintzberg (1994, p. 321) methodically and thoroughly took apart the conception that strategy can be planned, yet in strategic management, situations are assessed, decisions made, directions set, and actions taken. Accounting for the complex interplay of human actions and interactions requires a closer scrutiny of how strategy work is actually done by people (Whittington, 1996). This view recognizes the challenge that "the decision context of strategic management involves organizationally situated managers, widespread uncertainty, and poorly defined problems with unknowable social and economic consequences" (Powell et al., 2011, p. 1377). Research specialisms have emerged in the past decade to address so-called microstrategy, or strategy as practice through an activity-based view (Johnson et al., 2003). Applying activity theory, this is concerned with how strategy emerges from the interactions between actors and their contexts (Jarzabkowski, 2003). Behavioral strategy applies cognitive and social psychology to strategic management theory, grounded in "realistic assumptions about human cognition, emotion, and social interaction" (Powell et al., 2011, p. 1369). The strategic cognition perspective examines the cognitive structures and processes involved in diagnosis, decision making, and implementation (Narayanan et al., 2011). Seidl (2007) notes that the multitude of strategy perspectives, especially in strategy as practice, cannot be unified into a single field but exist as an ecosystem of autonomous discourses.

2.2. Sensemaking and sensegiving

Much strategic cognition research has focused on sensemaking, by individuals, groups, and as an organization, and how it affects strategic change. The strategic cognition perspective holds that top-level managers engage in sensemaking in order to make strategic judgments about change. There is a variety of definitions of sensemaking (Weick, 1995), although broadly it is taken to mean the process of giving meaning to experience. This might be regarded as placing stimuli (such as observations or data) in a framework or cognitive map. This enables one to "comprehend, understand, explain, attribute, extrapolate, and predict" (Starbuck & Milliken, 1988, p. 51); to understand connections among, for example, people, places, and events (Klein et al., 2006); or to explain surprises or discrepancies.

Weick (2001) compared sensemaking to a cartographer's mapping of a landscape, converting "a world of experience into an intelligible world" (p. 9). In situations of strategic change, it is the means by which members grasp the firm's internal and external environment and "define a revised conception of the organisation" (Gioia & Chittipeddi, 1991, p. 434).

Sensemaking is triggered when a person becomes aware of a disruption, a deviation from the expected (Weick, 1995, p. 5). This awareness occurs through a deliberate or formalized activity of information gathering or scanning (Daft & Weick, 1984). In a strategy context this means searching external and internal environments for factors important for the future performance. Starbuck and Milliken (1988) prefer the term *noticing* to *scanning*, implying its less formal, less deliberate nature and accounting for its more serendipitous aspects.

Sensegiving is the reciprocal activity to sensemaking, by which the outcomes of sensemaking, such as judgments to enact change, are articulated and given meaning to facilitate interpretation by others; in the corporate setting, this means the rest of the organization and other stakeholders (Gioia & Chittipeddi, 1991; Dutton & Ashford, 1993; Gioia et al., 1994). For change to succeed, it is crucial to that all constituents understand and accept the change, and sensegiving refers to the processes by which this change is framed and disseminated to ensure "buy in" (Fiss & Zajac, 2006). Gioia & Chittipeddi (1991, p. 446) suggest that a "captivating vision" is key because "it provides a symbolic foundation for stakeholders to develop an alternative interpretive scheme" and that "the symbolic constructions used to create meaning for others (i.e., to give sense) are instrumental to the effectiveness of the critical stage of proposing and initiating an overall change effort." However, 15 years later, Fiss & Zajac (2006, p. 1174) suggest that "more attention needs to be paid to the symbolic processes" involved. Another important related phenomenon is issue selling: the actions of constituents by which awareness of issues is raised. Through recognition of the sensegiving and issue-selling phenomena, Dutton and others have demonstrated the impact that middle-level managers and other constituents can have on strategy making (Dutton & Jackson, 1994; Dutton et al., 2001). This is pertinent to the microstrategy perspective and to the claim of this paper, namely, that these other constituents might include designers, who potentially make a large contribution to these symbolic processes. As well as being a powerful means of creating and communicating captivating visions, designing is itself seen as an act of sensemaking, and this is discussed next.

2.3. Design as sensemaking

As Weick notes, sensemaking is not the same as interpretation of an objective reality. Interpretation implies the existence of an "it," that "something is there, a text in the world, waiting to be discovered" (Weick, 1995, p. 13), but sensemaking constructs or invents the "it." It is "about sizing up a situation, about trying to discover what you have while you simultaneously act and have some effect on what you discover . . . [It] is seldom an occasion for passive diagnosis. Instead, it is usually an attempt to grasp a developing situation in which the observer affects the trajectory of that development" (Weick, 2001, p. 460).

Weick's comparison of passive diagnosis with an ongoing, observer-influenced trajectory is similar to Simon's comparison of design and science: whereas scientific endeavor seeks to understand "what is," the activity of designing constructs or invents a normative "it," that which "should be" (Simon, 1969, p. 114). Buchanan's (1992, p. 17) characterization of design practice and wicked problems has even stronger congruence:

> The designer begins with what should be called a quasi-subject matter, tenuously existing within the problems and issues of specific circumstances. Out of the specific possibilities of a concrete situation, the designer must conceive a design that will lead to this or that particular product. A quasisubject matter is not an undetermined subject waiting to be made determinate. It is an indeterminate subject waiting to be made specific and concrete.

Thus, determinacy, then specificity, emerges through the design process itself. Moreover, "Designs are strongly influenced by the representations in which they are expressed" (Eckert & Boujut, 2003). Just as in Weick's sensemaking, the observer affects the trajectory of "grasping a situation" and artifacts such as sketches and models created in the design process affect the developing design trajectory. This is through their use as communication tools or boundary objects, as discussed shortly.

Kolko (2010) observes that synthesis activity in designing is an abductive sensemaking process. "Through efforts of data manipulation, organization, pruning, and filtering, designers produce information and knowledge. . . . Designers, as well as those who research and describe the process of design, continually describe design as a way of organizing complexity or finding clarity in chaos" (Kolko, 2010, p. 17). Weick's constructed or invented "it" has then a parallel in what designers do, this quasisubject matter to be transformed into something specific and concrete. This may imply that designing is, or is akin to, a sensemaking process.

2.4. Design and strategy

We have seen that some authors agree that the design process may be seen as an instance of individuals and groups in a sensemaking activity. Further to this, I propose that the designed output (the artifact) is a symbolic embodiment of the designer's or the design team's sensemaking, both in a personal sense and on behalf of their employer or client. This symbolic embodiment may then be key in sensegiving, influencing sensemaking by others engaged in strategy, as will be expounded after a brief account of design's widening remit into strategy activities.

The academic examination of value added through product design is long standing and quite comprehensive, but more recent thinking emphasizes the contribution design can make to operations outside of manufacturing. Design practice extends to areas of research and customer insight, using such specialists as social psychologists, ethnographers, and anthropologists (Blaich & Blaich, 1993, p. 12). Design may also be applied where the end users are not the firm's customers but other stakeholders; Cooper & Press (1994) suggest that designers contribute in three key operational areas: the design of corporate identity, of saleable products, and of operating environments (see also, e.g., Hayes, 1990; Olson et al., 1998; Phillips, 2004).

More recent work attends to design as a tactical and strategic resource, notably as a tool with which to tackle wicked problems. While designers cannot claim a monopoly on creativity, they do apply creative methods to complex problems framed in real-world constraints. These distinctive methods have an important potential to address complex challenges, as has been recognized and investigated, initially by those examining the design process and the ways individual designers work their way through it and later by a wider group in industry and academia looking to design thinking as a tool to help understand and meet the complex challenges where analytical approaches are found lacking (see, e.g., Liedtka, 2004; Brown, 2008; Lockwood, 2009; Martin, 2009).

The origins of modern theories of the design process can be attributed largely to Schön (1983), who argued that design is a thought paradigm in its own right: "artistic, intuitive processes . . . [applied] to situations of uncertainty, instability, uniqueness, and value conflict" where objective approaches had been inadequate (cited by Cross, 2001, p. 54). Buchanan (1992) built on this, (re)introducing the design research readership to Rittel's concept of wicked problems in systems and planning theory (Rittel, 1972; Rittel & Webber, 1973). Rittel and Webber and Buchanan persuasively argue that many design problems are wicked.[2] If design methods and tools are well suited to addressing wicked design problems, then these methods and tools may arguably be useful for wicked problems outside the traditional design domain; if strategy is the

[2] Wicked problems are not only complex but also, in contrast to "tame" problems that may be addressed through positivist reasoning, they have no single correct solution, only "good" (or perhaps more commonly, "better than . . ."). They have no stopping rules to define when a solution has been reached (one can always aim for better) and there is no definitive test of a solution; it can only be assessed against its own formulation (the problem statement) and against other possible solutions. (For Rittel's 11 characteristics of wicked problems, see Rittel, 1972, pp. 392–393.)

act of designing an enterprise, then design thinking might be profitably applied to strategy (Liedtka, 2004; Martin, 2009).

Methods used in designing and the resulting artifacts can help in "exploring possibilities and building a qualitative understanding of what holds meaning, and hence value, for customers, employees, suppliers and other stake holders" (Stevens & Moultrie, 2011, p. 481). Artifacts created by designers and shared among senior managers and business leaders include representations of complex or intangible systems, of qualitative research findings, or simply a new product, service, or market. These might take a variety of forms, physical (such as models or working prototypes), graphic (renderings, charts, images, or sketches), or narrative (storyboards or videos). The value of these artifacts is in their capacity to capture and transfer, translate and transform knowledge, in their status as boundary objects.

2.5. Boundary objects in design, in strategic sensemaking

Carlile argues (at least in a product innovation context) that boundary objects (Star & Griesemer, 1989) are important in helping to establish "common interests for making trade-offs and transforming domain-specific knowledge" (Carlile, 2004, p. 563). Such boundary objects may be "simple or complex representations that can be observed and then used across different functional settings . . . (i.e., sketches, assembly drawings, parts, prototype assemblies, mock-ups, and computer simulations)" (Carlile, 2002, p. 451). They "can provide a concrete means of representing different functional interests and facilitating their negotiation and transformation in product-development settings" (Carlile, 2004, p. 559).

Carlile (2004) identifies three orders of increasing complexity in knowledge sharing: knowledge transfer, translation, and transformation. Knowledge transfer and translation occur at syntactic and semantic boundaries, respectively. Knowledge transformation occurs at more complex boundaries of pragmatic or political understanding, where actors must negotiate their differing interests and cognitive frameworks. Eckert and Boujut (2003, p. 145) characterize boundary objects in design to include any physical and virtual artifacts (sketches, technical drawings, models and prototypes) "that can convey meaning in interpersonal communication, but have an existence beyond a single act of communication." These objects serve as reference points but may be understood differently by the different participants: "Many design processes depend on the different participants interpreting boundary objects not in the *same* way but in *compatible* ways" (Eckert & Boujut, 2003, p. 146); new ideas arise and problems are identified through "interpreting vague or ambiguous objects, and then negotiating over their intended meaning."

This interpretation and negotiation might be regarded as sensemaking dialogue, and even the dialogue itself is a boundary object: "a way to externalize thoughts and achieve a shared construction of meaning. These dialogs may be considered boundary objects that permit exchange of thoughts. Other examples of boundary objects include cognitive maps and stored artifacts that can be retrieved for viewing" (Nosek, 2004, p. 56). From a microstrategy perspective, "*strategy practices* are the social, symbolic, and material tools through which strategy work is done . . . [including] material artefacts and technologies, such as PowerPoint, flipcharts, and spreadsheets" (Jarzabkowski & Whittington, 2008, p. 282). Jarzabkowski (2005) observes that semantic and pragmatic boundaries are likely to exist in many strategy processes, because they inherently span hierarchies. Strategy tools may therefore assume the status of boundary objects (Spee & Jarzabkowski, 2009). "Sensemaking is influenced by the actual, implied or imagined presence of others. Sensible meanings tend to be those for which there is social support, consensual validation, and shared relevance" (Weick, 2001, p. 461). Artifacts as boundary objects may aid consensual validation and promote shared relevance. The design process includes imagined others, and the artifact may serve to make them present for other actors. The artifact may also provoke critique or debate around philosophical or ethical issues, and some design activity focuses solely on this purpose, detached from any commercial imperative, such as Dunne & Raby's critical design (Dunne, 1999; Dunne & Raby, 2001) or Walker's (2006) propositional objects.

Thus, although neither Eckert and Boujout nor any other authors have examined designed artifacts as boundary objects in the strategy context, Jarzabkowski and others identify a role of material artifacts in strategy activity. Models and ideal-type objects (generalized representations of a varied group) can provide an abstraction that works for all knowledge domains across syntactic, semantic, and pragmatic boundaries (Star & Griesemer, 1989). Designed artifacts serve this role in some knowledge boundaries, so artifacts such as prototypes, concept sketches, and models might play this role in strategy activity.

3. DESIGN AND STRATEGIC SENSEMAKING

I have recounted and inferred from established literature that designing and strategy both involve an element of sensemaking, that design methods and tools can help those doing strategy to explore possibilities and build meaning, that boundary objects are important in microstrategy and in designing, and that designed artifacts may be meaningful boundary objects. From here it does not necessarily follow that designing or the artifacts resulting from designing are directly involved in strategic sensemaking. However, in sensemaking and sensegiving, symbols are important (Gioia & Chittipeddi, 1991; Gioia et al., 1994; Weick, 1995; Johnson et al., 2003). Sensemaking is more about "plausibility, coherence and reasonableness" (Weick, 1995, p. 61) than about accuracy, and this is where the symbolic resources of sensemaking are helpful. Such things as "myths, metaphors, platitudes, fables, and paradigms" contain a "good story. And a good story . . . shows patterns that may already exist in the puzzles an actor now faces, or patterns that could be created anew in the interest

of more order and sense in the future. . . . [They are] templates . . . the products of previous efforts at sensemaking. They explain. And they energise." (Weick, 1995, p. 61). These symbolic resources include the material artifacts and technologies that are the tools of strategy (Jarzabkowski & Whittington, 2008) and whose stories contain patterns to be recognized and acted on or revised and built upon. Is it such a great leap to suggest that symbolic resources could also include designers' sketches, drawings, models, and prototypes?

Rouleau (2005), taking an activity-based view of strategic change, offers a case example of the symbolic contribution of designed artifacts. She describes how middle managers in a clothing company "interpret and sell strategic change at the organisational interface." In examining the symbolic resources in play, Rouleau identifies routines practiced by a sales manager, which she calls *primary sensemaking* and *sensegiving micropractices.* One routine Rouleau terms *building the product symbolically*. This involves spending time with the design team, to "enrich her vocabulary" with the designers' language of the new product line in order to help her understand and convey something of the products' essence. In another routine, "exploring the 'feel' of the [new] market," the sales manager borrows artifacts from the designers to solicit feedback from retailers: "I bring the creation out of the design room. I like to show the sketches and fabric samples to the people who will be selling directly to the woman who is going to wear our clothing" (Rouleau, 2005, pp. 1420–1421).

Rouleau's account brings design into the microstrategy and strategic cognition literature, and provides an example of designed artifacts having a role in microstrategy sensemaking and sensegiving. These examples are artifacts from the design for market process, so their role as symbolic resources is a secondary by-product. In the next section, more examples are presented, some of which are designed for the purpose of their symbolic role.

3.1. Indicative examples

In this section I present some quotations from designers interviewed in the course of a series of case studies (Stevens & Moultrie, 2011), during which the idea for this paper arose. This larger study sought to characterize design contributions according to established models of strategic management. The subject of this article had not been considered at the time, but one of the themes to emerge in the study was designers' activities and resulting artifacts that were not intended for the market, that is, they had some internal purpose. Seeking to clarify these internal roles in terms of cognitive strategy, the transcripts were revisited for a second analysis. Themes for this second analysis were derived from the key texts already mentioned (especially Daft & Weick, 1984; Dutton & Ashford, 1993; Weick, 1995; Narayanan et al., 2011). Interview transcripts from the previous study were searched for any remarks that could be related to sensemaking and sensegiving, to strategic decision making, long-range planning, and other indicators such as change, complexity, future, symbols, visualization, vision, and communication. Several industrial designers reported examples where their output was not directly part of the new product development stream and had impacted company strategy in various ways. These cases are presented here in the form of anonymized, much-condensed summaries; quotations are direct and verbatim from the transcripts.

Like many empirical studies into business environments, this study attempts to increase knowledge about a complex situation by gathering voiced opinions. It does not seek to prove or refute immutable, generalizable laws. It is an attempt to describe phenomena that are observed or reported that may be meaningful or useful in a more general context. The transcript extracts from three respondents are presented here as possible examples of design contributions being made in sensemaking and sensegiving activities at various levels. They have been selected not to offer conclusive proof, nor as typical or representative samples, but as illustrations of why I think the theory is worth further investigation.

3.1.1. Andy

Andy works for a large European firm that designs and manufactures mobile phones and devices, employing over 40,000 worldwide, with annual turnover around €40 billion (2010). It employs several hundred industrial (product) designers and interaction designers in London.

Andy is head of the firm's midrange design strategy team working to a 1–5 year horizon, bridging between long-term strategic vision and the more immediately market-driven product design team. He has about 20 years' industry experience.

Planning a product portfolio for the years ahead is a strategic task that designers in the firm are increasingly contributing to. Previously, decisions were made by the road-mapping team in the business planning department, on the basis of technical and functional specifications. However, the specifications alone cannot describe the products sufficiently to convey the direction in which they would take the firm. Their brand position is a crucial strategic consideration and is critically threatened at this time, but the subtleties and nuances of the various products are not adequately captured or communicated in a spreadsheet of specifications.

> On a spreadsheet it looks very similar but actually the designs are very different, so they are not similar products in terms of how people would respond to them. . . . We are helping the business understand the market in more emotional terms. (Andy)

Product designers in Andy's team now create models to represent the future portfolio of products, which has a twofold benefit: first, it provides a visual embodiment of a possible future, a boundary object that is part of a process among top-tier managers and senior executives that builds consensus and facilitates decisions.

> It's about helping the business get clarity of what [the business itself] is going to look like in 5 years. We have just delivered some 20 handset models so that when we laid them all out on the table we could say well, that's pretty much what our portfolio is going to look like. (Andy)

Second, this visual embodiment serves as a powerful symbolm a "captivating vision," in the rest of the firm, representing a strategic objective or mission, a shared vision for the future:

> It's the only time that everyone really gets what you are talking about, or they understand it in their own terms and then can say okay, that will work. . . . If it's on a spreadsheet or in a strategy document, no one really actually has a passion around it, and the best thing we can do is design something that people like, they all get behind it. . . . And then that gives something palpable, something that we can talk about, particularly in global companies where you have lots of different people speaking different languages, different cultures and reference points. (Andy)

To summarize Andy's account, designers' activities make tangible the diverse business, market, and technological requirements. Top-tier and midlevel managers including business planning and brand management use designers' artifacts (prototypes, models, graphic boards, and simulations) in building consensus and aiding decision making. Top-tier and midlevel managers use designers' artifacts to "build up passion" around a strategic vision for other constituents.

3.1.2. Bruce

Bruce trained as an industrial designer and has around 15 years industry experience. He works in the large Research & Development (R&D) group of a UK-based telecommunications firm active in technology and service delivery. The firm has around 100,000 staff worldwide and headquarters in London. Its annual turnover is approximately £20 billion (2010). It primarily provides communications network services and technology to the consumer, corporate, and public sectors.

Most activity in R&D is carried out by scientists and technologists, and designers in the division are a small minority; their main role is to conceive, explore, and visualize new applications of communications technology. These concepts are presented as prototypes or visual stories used in board-level sensemaking and decision making, by contributing to business leaders' awareness of technical possibilities and competitor activity, and helping them generate ideas around long-term options for the firm.

R&D designers use sketches, models, and prototypes to "bring technology to life." Visual methods are valued for conveying and exploring ideas that are difficult to articulate in words. Although their work must appear professional quality, an overstyled model or concept can distract from the principle behind the concept; accounting for the complex factors that lie behind the concept is more important than its appearance.

> Styling is downplayed within Research. It doesn't earn me any Brownie points. Here people aren't interested in whether it looks cool or funky. [Merely] being visual doesn't cut any mustard here. Sometimes it's a hindrance. The more holistic, strategic we can make something [the better]: IP, potential revenue, and the backstory why we've done this initial prototype, they're the important things. (Bruce)

However, a stylish concept attracts media publicity when it is needed, such as when attempting sensegiving around a new company direction. When they are taken up by the board, concepts from R&D may have a far-reaching impact on the business, influencing pricing structures or network infrastructure, or even creating new businesses for the group.

> [We generate and communicate] concepts which together might actually create a whole new business case related to the delivery of lots of content . . . [which might] drastically change the strategy for the deployment of wi-fi hotspots across the city, for instance. And will influence potentially even the pricing models. . . . So these concepts . . . should influence the core strategy that the company develops and deploys. (Bruce)

To summarize, Bruce and other R&D designers generate future concepts with far-reaching strategic implications. The resulting artifacts are prototypes, models, graphic boards, and simulations. Board-level directors and top-level managers use R&D designers' artifacts to understand, gain consensus, and make judgments around new technology applications that may imply new business opportunities and directions.

3.1.3. Chris

Chris works in a small London-based product strategy consultancy employing a dozen or so mostly designers but also researchers. Chris trained and works as a designer, has been in the firm for 5 years, has been a director for 2, and has about 6 years' experience in the design industry.

The company advises client firms on diverse design-related issues, such as market positioning, portfolio planning, and "product vision," what they regard as the front end research of the product design and development process. Most of their clients are large multinational consumer goods brands, each with its own in-house design and R&D team and a network of external agencies such as market researchers. These teams have their own specialisms, but clients come to the consultancy for their particular approach to synthesis. Chris believes their strength lies in three capabilities: integrating and mediating between professional domains ("speaking the language and empathising" with, e.g., R&D, engineering, and marketing); working at the micro- and macrolevel, from global, long-term influences down to detailed design guide-

lines; and capturing and conveying findings in rich, meaningful, visually sophisticated communications.

> We help develop processes, and frame problems to come up with recommendations about what they should do next, generally around their products. . . . A lot of our clients say we bring rigour to something inherently subjective. . . . We are not relying on one source of evidence, such as the brand dimension . . . [but] trying to identify the sweet spot between these different things, and *being able to communicate* that as a rationale. . . . To make sense of that complexity we have to be quite systematic and structured about breaking down those different areas and thinking about the dynamics within each of them. (Chris)

"Being able to communicate" here means both an explicit rationale behind any recommendations, backed up with hard data, and a visualization of complex or hard to articulate findings.

> What people value is our ability to analyse, structure, and synthesise complex issues, then communicate them in a really engaging way. So it's a real use of design skills at that end, creating an engaging artifact, whether that's a book, [a movie,] or a CD or report. (Chris)

Chris gives an example of such a symbolic representation, a printed magazine mock-up, to help a client make sense of market segmentation data. According to Chris, most consumer needs segmentation data from marketing teams is dense, quantitative, and hard to make sense of, especially by designers. In this instance, his firm was engaged to translate this data for the client's own designers, who would then execute the detailed design work:

> We might do more qualitative research [into] attitudes and behaviours to, say, social networks, their families, leisure, their jobs. Then synthesise that to bring it to life. Our output could be a physical printed book, it's very editorial, as if in the style of the magazines that those people would be buying. Making it as visual and tangible as possible but bringing in data where necessary. (Chris)

The format is carefully chosen and executed to frame and give sense, to embody and convey complex *meaning* (not just information) with immediate impact "across silos . . . into the hands of others in order to use it." In other instances, such output has a more senior audience and aids sensemaking at the top tier:

> We place a lot of emphasis on the media we produce, even if it is about higher level strategic recommendations, it is not in the form that people usually receive that sort of thing, which seems to go down well. (Chris)

The firm also works around product portfolio strategy, planning, and rationalizing a client's product ranges for the 5- to 10-year future, creating tools and processes "to structure and articulate the brand." Designed outputs are produced to symbolize a long-term possibility or objective, or "product vision."

> We sometimes work with [other designers] to articulate this end game, this Product Vision—it's not *really* what it will look like, but a manifestation of that strategy we've plotted out. So, if we get all that in place, this is where we could end up, what it might look like. It's something to work towards, a sort of motivating tool for people to use. It also gives people a sense that their work is part of something bigger. . . . Or it can be internal tool for people to say "look this is what our brand is all about, what we should be fighting for." (Chris)

Like a concept car, these artifacts are never intended to go into production for the market. They are symbolic or emblematic of a future identity of the firm, and give sense to the unknown future, to the company vision, and to employee purpose and belonging (hence company culture).

> Most of these companies have corporate mission, vision, departmental mission, vision, but they are still at a very abstract level, they are just words. This makes it more touchable. . . . It could be a model, an experience prototype, packaging, accessories, maybe screen mock-ups if there is any interactivity. It is not meant to be a design as such, more of a way of articulating a strategy, you need to educate people in how to read that as a concept, rather than something that will be seen in the market. People are not necessarily used to dealing with physical artifacts in that way. We sometimes use the idea of the concept car as a metaphor. (Chris)

Artifacts are also used for issue selling by the client (mid-level) to demonstrate and promote their activities to senior management:

> [It is also] a way for senior management to validate that they are on the right track, that they have confidence in a set of initiatives, and it is leading somewhere it, it's not just aimless. (Chris)

In summary, Chris and his colleagues create artifacts (models, films, books, magazine mock-ups, simulations, and diagrams) that visually articulate complex and uncertain contexts. Managers (their client) use the artifacts to embody rich qualitative data and "bring it to life" for constituents in other operations. Managers and directors use the artifacts as symbols of a product strategy vision for other constituents within and outside the (client) firm, for legitimating their activities to seniors and directors.Collating all three cases, I propose an interpretation of the designers' roles in relation to

other strategy actors, in which sensemaking and sensegiving activities may include the following:

1. Designers' sensemaking and sensegiving activities interpret, combine, and synthesize from diverse contexts, generating artifacts that symbolize complex and uncertain contexts, future concepts, or objectives.
2. Top-tier managers and executives use artifacts in sensemaking, building consensus, and aiding decision making around new business opportunities and directions.
3. Managers use artifacts in sensegiving, to embody rich qualitative data and "bring it to life," aiding sensemaking by constituents in other operations.
4. Managers and directors use the artifacts in sensegiving, as symbols of a product strategy vision, for sensemaking by other constituents in the rest of the organization and outside it.
5. Managers use the artifacts in issue selling, for legitimating their activities to seniors and directors.
6. Top-tier and midlevel managers use designers' artifacts in sensegiving, to "build up passion" around a strategic vision for other constituents.

4. DISCUSSION

In this review of literature from design research and microstrategy, I have set out my claim that designed artifacts may be valuable symbolic resources in strategic sensemaking and sensegiving. I have then used extracts from three interviews with designers as examples to illustrate this claim.

"Strategy practices are the social, symbolic, and material tools through which strategy work is done" (Jarzabkowski & Whittington, 2008, p. 282), and I have argued that microstrategy should include in these practices designed artifacts used for internal purposes. I also propose that, as strategy practices, design and designed artifacts are types of "enactment" (Weick, 1995, 2001), that is, they are "a means to gain some sense of what one is up against, as when one asks questions, . . . builds a prototype to evoke reactions, makes a declaration to see what response it pulls, or probes something to see how it reacts" (Weick, 2001, p. 462).

The deliberate design of boundary objects, as described by the designers in the interview extracts, seems to be a particular type of design worth investigating further. Artifacts such as Chris's magazine, Bruce's not too funky interactive prototype, or Andy's 20 phone handsets are important not for their *manifest* function (as a magazine, a navigation system, a smart phone, or whatever) but for their *symbolic* function, which may be regarded as a socially constructed "status function" (Searle, 1995; see also Crilly, 2010, for a synthesis of theories of artifact functions). As Chris says, each prototype is "not meant to be *a design* as such, more of a way of articulating a strategy." Here "a design" (the noun) means a representation or blueprint for the real thing. However, these artifacts will never go into production; there will be no real thing. Still, like a concept car, these artifacts must be designed *as if* for an end user or customer in some believable ways for them to perform their symbolic purpose. I stress the word *believable*, because belief is precisely the objective. The concept car may be nuclear powered or have no steering wheel, but it must be recognizably a car to serve its symbolic purpose ("See how bold/innovative/green/ethical we are!"). Like Magritte's pipe, the phone is not a phone, although it needs to be a convincing symbol of one. It must be designed *as if* for users, *as if* it affords the making of phone calls and all the other exciting functions promised. However, its users are not really users at all but *readers*, collectively making sense, finding shared meaning in what it symbolizes.[3]

4.1. Limitations and further work

The aim of this article is not to make generalizable claims about these phenomena, nor are the interview extracts presented to prove the link between strategic sensemaking and design. Both aims would need a more focused and rigorous research approach, as is discussed shortly. By drawing attention to their occurrence in industry practice, I hope to provoke interest in this possibility. Rouleau's (2005) account is rare in that it brings the role of designed artifacts into the microstrategy/strategic cognition literature. When published, it was also rare in its microstrategy approach, connecting "what goes on deep inside organizations and broader phenomena outside" (Whittington, 2006, p. 617). Perhaps now microstrategy is an established research domain, there will be more empirical work exploring design in this context.

I must be clear to acknowledge that the argument presented from literature is not a deductive, clear-cut case for design in strategic sensemaking but a proposition arrived at abductively; I argue that the conceptual overlap of strategy, sensemaking, and design warrants deeper investigation. Although designed artifacts can be powerful symbols, embodying and conveying meaning, there are many other factors that will likely play a part in managers' and executives' sensemaking. I do not wish to overstate the proportional impact of these artifacts. Further work might seek to answer in what kinds of situations or organizations is the impact higher? Are there certain types of organizations that are more open to using design in this way? Is design an overlooked resource in the strategy context? Is the role equally valid in organizations not involved in product development (such as services or nonprofits)?

[3] Interviews in 17 UK firms were carried out over 3 years (2007–2010), and deep case studies were made of 2 of these firms. Firms were judged suitable based on being accessible and willing participants and having some visible design activity. Semistructured interviews were conducted with designers, product managers, and others in senior design related roles. Interview recordings were transcribed verbatim. Discussions were loosely structured around four key concepts relating to the use of design throughout the organization. The concepts were deliberately broad to avoid biasing the responses with leading questions. They were stakeholder involvement in design activities, design support of the firm's operations, roles of design from strategy to market, and evolving contributions of design over time.

The interview cases here do not carry much weight alone, limited as they are by the small sample size, cherry-picked to illustrate the point being made. The respondents quoted are all designers who, knowingly or otherwise, may have a tendency to overstate their role. We are missing an important voice: that of the senior strategy makers themselves who could corroborate the claims made by the designers.

4.2. Implications for design communication practice

The mediating role of artifacts in microstrategy is relevant to readers who are active in design, strategy, or research. As it stands, the claim made here may provoke reflection among practitioners as to whether they are already involved in such a role. If it is corroborated in further research, then designers like those quoted, who already engage in such activities, may understand and find recognition for the usefulness of their work and be better able to articulate its value. Other designers, whether in-house or agency, will be able to make a better case for a communication role at the strategic level and consider expanding their activities to explicitly engage in symbolic sensemaking and sensegiving activities. Managers and strategy makers may be curious to include designers to aid communication through sensemaking and sensegiving in strategic activities they would never thought relevant to design.

4.3. Implications for research

This article deals with the conceptual overlap of (at least) two disciplines. By making this claim, I aim to draw the attention of researchers in the microstrategy and strategic management fields, to increase awareness, interest, and research into the role of design in sensemaking and sensegiving.

Current views of the roles of artifacts (Eckert & Boujut, 2003; Crilly et al., 2008) neglect the internal strategic use of artifacts expressly designed for their symbolic rather than their manifest function. There are echoes here of critical design (Dunne, 1999; Dunne & Raby, 2001) and of propositional design (e.g., Walker, 2006), activities that both aim to provoke debate through the design of artifacts; however, I suggest these concepts are currently more the preserve of academia or the art world than of industry. Further efforts to characterize the practice and artifacts involved could bring clarity to their propositional role in communication. In strategy research, Powell et al. (2011, p. 1377) call for efforts to understand "executive judgment in the actual conditions of high-stakes, complex problem solving in organizations . . . [and for] improving the psychological architecture of the firm." Further investigations of the claim of this article would lead toward these aims.

Follow-up studies will need to consider the interpretive nature of the phenomenon: to capture the meanings ascribed to the artifacts by the members of the organization (not only by the researchers), to be grounded in the organization culture, and to deeply involve "informants who are experiencing the strategic change effort" themselves (Gioia & Chittipeddi, 1991, p. 435). A case study approach should take these into account, not relying on interview data alone but including ethnographic data and observations (Jarzabkowski, 2003). Gioia and Chittipeddi (1991) provide an exemplary dual-researcher methodology for such an enquiry, in which they use an "insider" researcher who is a participant in the strategic change process to gather ethnographic data. This is then analyzed more objectively by an "outsider" researcher.

5. CONCLUSION

Based on empirical research literature, illustrated with extracts from three interviews with designers, I have built my claims that: sensemaking is an important concept in design and in strategy; design methods and tools are valuable in strategy for exploring possibilities and building meaning; boundary objects are important in microstrategy and in designing; designed artifacts may be meaningful boundary objects; and designed artifacts may be symbolic resources, valuable in sensemaking and sensegiving.

The typical design process in which designers (individuals, a team, and/or their managers) respond to a brief applies when the purpose of the resulting artifacts is to go into production and then to market. However, in recognizing the less typical, underexamined design activities that may not lead directly to a marketed product, I have proposed a hitherto unrecognized role of designed artifacts in sensemaking and sensegiving as part of microstrategy.

Because of the breadth of the topic, this article must be considered a work in progress, a call for further empirical exploration of such a complex subject. Design in such a role should be examined further, to better characterize the way it is done, its recognition among practitioners, and its value, impact, and influence.

ACKNOWLEDGMENTS

I am grateful to the anonymous reviewers for their many constructive suggestions on previous drafts, especially the excellent additional literature brought to my attention. Thanks also to Dr. Nathan Crilly of University of Cambridge for his candid and helpful comments from which this article developed.

REFERENCES

Blaich, R., & Blaich, J. (1993). *Product Design and Corporate Strategy: Managing the Connection for Competitive Advantage*. New York: McGraw–Hill.

Brown, T. (2008). Design thinking. *Harvard Business Review 86(6)*, 84–92.

Buchanan, R. (1992). Wicked problems in design thinking. *Design Issues 8(2)*, 5–21.

Carlile, P.R. (2002). A pragmatic view of knowledge and boundaries: boundary objects in new product development. *Organization Science 13(4)*, 442–455.

Carlile, P.R. (2004). Transferring, translating, and transforming: an integrative framework for managing knowledge across boundaries. *Organization Science 15(5)*, 555–568.

Cooper, R., & Press, M. (1994). *The Design Agenda: A Guide to Successful Design Management*. Chichester: Wiley.
Crilly, N. (2010). The roles that artefacts play: technical, social and aesthetic functions. *Design Studies 31*, 311–344.
Crilly, N., Maier, A., & Clarkson, P. (2008). Representing artefacts as media: modelling the relationship between designer intent and consumer experience. *International Journal of Design 2(3)*, 15–27.
Cross, N. (2001). Designerly ways of knowing: design discipline versus design science. *Design Issues 17(3)*, 49–55.
Daft, R.L., & Weick, K.E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review 9(2)*, 284–295.
Dunne, A. (1999). *Hertzian Tales*. London: Royal College of Art.
Dunne, A., & Raby, F. (2001). *Design Noir: The Secret Life of Electronic Objects*. Berlin: Birkhauser.
Dutton, J.E., & Ashford, S.J. (1993). Selling issues to top management. *Academy of Management Review 18(3)*, 397–428.
Dutton, J.E., Ashford, S.J., O'Neill, R.M., & Lawrence, K.A. (2001). Moves that matter: issue selling and organizational change. *Academy of Management Journal 44*, 716–736.
Dutton, J.E., & Jackson, S.E. (1994). Categorizing strategic issues: links to organizational action. *Academy of Management Review 12(1)*, 76–90.
Eckert, C., & Boujut, J.F. (2003). The role of objects in design co-operation: communication through physical or virtual objects. *Computer Supported Cooperative Work 12(2)*, 145–151.
Fiss, P.C., & Zajac, E.J. (2006). The symbolic management of strategic change: sensegiving via framing and decoupling. *Academy of Management Journal Archive 49(6)*, 1173–1193.
Gioia, D.A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal 12(6)*, 433–448.
Gioia, D.A., Thomas, J.B., Clark, S.M., & Chittipeddi, K. (1994). Symbolism and strategic change in academia: the dynamics of sensemaking and influence. *Organization Science 5(3)*, 363–383.
Hayes, R.H. (1990). Design: putting class into "world class." *Design Management Journal 1(2)*, 8–14.
Jarzabkowski, P. (2003). Strategic practices: an activity theory perspective on continuity and change. *Journal of Management Studies 40(1)*, 23–55.
Jarzabkowski, P. (2005). *Strategy as Practice: An Activity-Based Approach*. Thousand Oaks, CA: Sage.
Jarzabkowski, P., & Whittington, R. (2008). A strategy-as-practice approach to strategy research and education. *Journal of Management Inquiry 17(4)*, 282–286.
Johnson, G., Melin, L., & Whittington, R. (2003). Guest editors' introduction: micro strategy and strategizing: towards an activity-based view. *Journal of Management Studies 40(1)*, 3–22.
Klein, G., Moon, B., & Hoffman, R.R. (2006). Making sense of sensemaking: 1. Alternative perspectives. *Intelligent Systems, IEEE 21(4)*, 770–773.
Kolko, J. (2010). Abductive thinking and sensemaking: the drivers of design synthesis. *Design Issues 26(1)*, 15–28.
Liedtka, J. (2004, Winter). Strategy as design. *Rotman Management*, 12–15.
Lockwood, T. (2009). *Design Thinking: Integrating Innovation, Customer Experience, and Brand Value*. New York: Allworth Press.
Martin, R.L. (2009). *Design of Business: Why Design Thinking Is the Next Competitive Advantage*. Cambridge, MA: Harvard Business School Press.
Mintzberg, H. (1994). *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, Planners*. New York: Free Press.
Narayanan, V.K., Zane, L.J., & Kemmerer, B. (2011). The cognitive perspective in strategy: an integrative review. *Journal of Management 37(1)*, 305–351.
Nosek, J.T. (2004). Group cognition as a basis for supporting group knowledge creation and sharing. *Journal of Knowledge Management 8(4)*, 54–64.
Olson, E.M., Cooper, R., & Slater, S.F. (1998). Design strategy and competitive advantage. *Business Horizons 41(2)*, 55–61.
Phillips, P.L. (2004). *Creating the Perfect Design Brief: How to Manage Design for Strategic Advantage*. New York: Allworth Press.
Powell, T.C., Lovallo, D., & Fox, C.R. (2011). Behavioral strategy. *Strategic Management Journal 32(13)*, 1369–1386.
Rittel, H.W.J. (1972). On the planning crisis: systems analysis of the "first and second generations." *Bedrifts Okonomen 8*, 390–396.
Rittel, H.W.J., & Webber, M.M. (1973). Dilemmas in a general theory of planning. *Policy Sciences 4*, 155–169.
Rouleau, L. (2005). Micro-practices of strategic sensemaking and sensegiving: how middle managers interpret and sell change every day. *Journal of Management Studies 42(7)*, 1413–1441.
Schön, D. (1983). *The Reflective Practitioner*. London: Temple–Smith.
Searle, J. (1995). *The Construction of Social Reality*. London: Allen Lane.
Seidl, D. (2007). General strategy concepts and the ecology of strategy discourses: a systemic–discursive perspective. *Organization Studies 28(2)*, 197–218.
Simon, H.A. (1969). *The Sciences of the Artificial*. Cambridge, MA: MIT Press.
Spee, A.P., & Jarzabkowski, P.A. (2009). Strategy tools as boundary objects. *Strategic Organization 7(2)*, 223–232.
Star, S.L., & Griesemer, J.R. (1989). Institutional ecology, "translations" and boundary objects: amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science 19(3)*, 387–420.
Starbuck, W.H., & Milliken, F.J. (1988). Executives' perceptual filters: what they notice and how they make sense. In *The Executive Effect: Concepts and Methods for Studying Top Managers* (Hambrick, D.C., Ed.), pp. 35–65. Greenwich, CT: JAI Press.
Stevens, J., & Moultrie, J. (2011). Aligning strategy and design perspectives: a framework of design's strategic contributions. *Design Journal 14(4)*, 475–500.
Walker, S. (2006). *Sustainable by Design: Explorations in Theory and Practice*. London: Earthscan/James and James Science.
Weick, K.E. (1995). *Sensemaking in Organizations (Foundations for Organizational Science)*. London: Sage.
Weick, K.E. (2001). *Making Sense of the Organization*. Oxford: Blackwell.
Whittington, R. (1996). Strategy as practice. *Long Range Planning 29(5)*, 731–735.
Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies 27(5)*, 613–634.

John Stevens is a Senior Lecturer and Program Leader of the MA/MS in multidisciplinary design innovation at Northumbria University. He has worked for 12 years in industry in interaction design and branding. John attained his doctorate at the University of Cambridge, where he investigated design as a strategic resource. His diverse academic interests reflect his background, which includes a BS in molecular biology (King's College, London) and a master's in industrial design engineering (RCA, London). Dr. Stevens' research interests are in the application of design methods and design thinking in strategy and in emerging contexts, encompassing design of products, interactions, and systems.