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Design Innovation and the Team

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Design Innovation *and the* TEAM

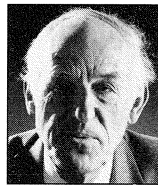
GIVEN THE INTRICACIES of contemporary markets, products and businesses, a team approach is one of the most effective innovation strategies. But how do managers put together the effective team? Based on extensive research and testing, Belbin offers guidelines for identifying individuals who will make strong team players and then follows up with recommendations for orchestrating the team's efforts and judging its success.

By Dr. R. Meredith Belbin

Good design brings commercial success. The statement would be endorsed by many. Yet, after more than 30 years in industrial consulting, my experience regrettably leads me to the words of the song: "... it ain't necessarily so." Consider two cases that recently came my way.

A medium-sized British company decided to produce a motor caravan using the engine and chassis of a small family automobile manufactured by Ford. The finished product was an excellent example of ingenious planning and the highest standards of workmanship. It won an award from the Design Council and the selling price was fair and realistic. But its design success was not matched by its sales record. What went wrong?

What had been overlooked were significant changes in the market. The advent of inexpensive packaged holidays to exotic places undermined the appeal of the do-it-yourself vacation to small low-income families. Instead, camping and caravanning moved up-market with increasing numbers of professionals taking



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advantage of the opportunities for open-air recreation. These new affluent enthusiasts, however, were looking for larger and more luxurious vehicles. The result was that the low end of the market moved into recession, as there were few takers for economy caravans, in spite of the fact that, in this case, the camper's design was award-winning.

I encountered another lesson in the relationship between quality design and effective business in Cambridge, my home, where the University produces more highly qualified scientists and engineers than any other establishment in the United Kingdom. As it happened, two talented students in an engineering course had decided to develop a bicycle lamp as a class project, an understandable choice in a city renowned for its high density bicycle traffic. Upon completion, the lamp was admired for the excellent quality of its light and the ingenious approach to the combination lock that rendered the device nearly thief-proof. Moreover, it was very economical

to produce. In this situation, the high interest and demand for the product prompted the designers and several financial backers to set up a company, Light-work, to manufacture the lamp. The group even anticipated seasonal fluctuations in sales and arranged that the firm would perform light engineering work during these slow periods.

Nonetheless, with all the careful planning, the operation eventually came to grief. Belatedly, managers discovered that cycle shops tended to be small and widely dispersed so that, given the limited size of orders, it was not cost-effective to sell the product through in-house representatives. Another strategy was to depend on trade distributors, but available agents proved more interested in the commission (high, in the case of market leaders) than in the quality of the product being promoted. Nor were other manufacturers interested in purchasing the new design, because it threatened rather than complemented their existing line.

The point is that good designs often fail to make their mark commercially. And, perversely, poor designs can sometimes achieve unwarranted success! In this latter category, I recall an example from carpet retailing. It is common knowledge that most quality carpets require padding. Furniture stores, on the other hand, do not generally want to hold stocks of padding, as they are bulky and have no display value. In this context, one of the most successful firms I have encountered was in the unglamorous carpet-padding business. Indeed, its profit margins were larger than most firms in the carpet industry itself, even though the quality of its padding was mixed and unpopular with carpet-layers as bits of felt often came off creating quite a mess. Where the padding company scored was in its speedy delivery, easily outstripping many worthy competitors. In this instance, sales were high because no supplier of carpets was ever kept waiting for padding.

Design in a Social Context

A common reason that the correlation between design excellence and economic reward is not stronger is that too little attention is paid to the complexities involved in establishing a market for improved designs, complexities that are perhaps more significant in the launching of innovative products. Here, there is no substitute for teamwork. Market research, analyses of competitive products, new product design, product testing, packaging, promotion, costing and pricing, all require a considerable degree of co-ordination. Error or oversight in any one area can jeopardize the final outcome. Independent expertise and creativity can make important contributions. Yet, executives and design managers that seek to nurture innovation must remember that, in practice, individual potential is limited. This conclusion is

confirmed by the experience of companies at trade exhibitions, where organizations are frequently besieged with appeals from frustrated designers and inventors whose personal efforts elsewhere have never gained recognition.

In my experience, the essence of translating good design into a commercial success lies in finding a small number of people who are both qualified to evaluate the many dimensions of a venture and able to develop complementary working relationships. Once such a team is formed and empowered to move an undertaking forward, things can move remarkably fast.

Choosing Partners: Functional vs. Team Roles

Clearly, this raises the issues of what makes a good team and how to put such a team together. The conventional wisdom has been to invite experts in each critical area and set them up as a working group. Unfortunately, many organizations that follow this tactic eventually live to regret it. Specialists often fail to gel as a team and usually have gaps in their understanding of a problem.

The perennial difficulty is to balance the keen insights of specialists with the broad view of generalists. Technical wisdom can be had on almost any subject, and some experts are actually competent in several fields. On the other end of the spectrum are people who can scarcely be regarded as professionals in their own right, yet have such wide knowledge and interests that they can hold their own with anyone. These individuals can be especially creative, or have a unique talent for analysis, or come with an open-minded perspective that enables them to play a valuable role even if they are ostensibly unqualified.










Keeping these profiles in mind permits managers to formulate a positive personnel strategy to address complex design challenges. In particular, one useful technique in developing effective teams is to review the composition of the group in terms of a two-dimensional matrix. One dimension assesses a candidate with respect to a functional role – does the person have the experience and qualifications needed to fulfill the responsibilities and official duties of the job? The other dimension is a critique of the team role – a study of those characteristics that affect the way one team member interacts with another so as to facilitate progress as a whole.

Historically, this team role theory,¹ now part of an international school of thought, was first developed following a prolonged period of experimentation at Henley Management College near Hambleden, En-



1. This theory is thoroughly described in my book, *Management Teams: Why They Succeed or Fail* (Oxford: Heinemann, 1981).

Team-Role Profile

Roles and Descriptions Team-Role Contribution	Allowable Weaknesses
 Plant: Creative, Imaginative, unorthodox. Solves difficult problems.	Weak in communicating with and managing ordinary people.
 Resource Investigator: Extrovert, enthusiastic, communicative. Explores opportunities. Develops contacts.	Loses interest once initial enthusiasm has passed.
 Co-ordinator: Mature, confident and trusting. A good chairman. Clarifies goals, promotes decision-making.	Not necessarily the most clever or creative member of a group.
 Shaper: Dynamic, outgoing, highly strung. Challenges, pressurizes, finds ways round obstacles.	Prone to provocation and short-lived bursts of temper.
 Monitor Evaluator: Sober, strategic and discerning. Sees all options. Judges accurately.	Lacks drive and ability to inspire others.
 Teamworker: Social, mild, perceptive and accommodating. Listens, builds, averts friction.	Indecisive in crunch situations.
 Implementer: Disciplines, reliable, conservative and efficient. Turns ideas into practical actions.	Somewhat inflexible, slow to respond to new possibilities.
 Completer: Painstaking, conscientious, anxious. Searches out errors and omissions. Delivers on time.	Inclined to worry unduly. Reluctant to delegate.
 Specialist: Single-minded, self-starting, dedicated. Provides knowledge or technical skills in rare supply.	Contributes on only a narrow front.

gland. There, participants in the General Management Course were organized as teams to play a competitive business game. To help guide who went into which team, psychometric tests were used to investigate a number of hypotheses regarding the effectiveness of different team compositions. Overall, some patterns worked better than others. In addition, relationships were found between test scores and the various behaviors in which team members engaged. Not unexpectedly, complementary patterns of behavior had the effect of improving performance, and ultimately a knowledge of the test scores within each team was used – with some success – in predicting the business outcomes of the exercise.

The advantage of psychometric tests is that they lend themselves to systematic follow-up research. On the other hand, a basic weakness is that they are overreliant on self-reporting. Since a boss, colleagues and even subordinates may have relevant observations about how a person behaves on the job, especially with respect to issues of job transfer, the most accurate portrait of an individual's team role occurs when both self-reporting and observer

assessments are combined. In the system developed at Henley, we include both kinds of evaluations and use a computer program known as INTERPLACE to relate the data statistically. Within a few seconds, the software provides advice on placement, counseling, job fit and working relationships on the basis of integrated team role information. Over time this analysis has served to refine the team behavioral clusters discovered at Henley; a list and brief description of the various team roles is illustrated in the accompanying chart.

Examination of these clusters shows an association of particular strengths with what are termed "allowable weaknesses." In other words, a price sometimes has to be paid for achieving distinction in a role field. In practice, as long as there are fully complementary and cooperative relationships among team members, the value placed on an individual's strengths generally outweighs any weaknesses. The positive nature of this experience has led to the saying: "Nobody's perfect but a team can be" – a phrase that has become the hallmark of this team role theory.²

Success and Failure in Design and New Venture Teams

As a complement to this theoretical work, I have had the opportunity over rather more than one decade to examine the composition of R&D and New Venture teams that were underperforming in several large organizations. In each case, I measured the team role profiles and usually suggested changes in the team composition. I recorded the impact of these modifications and, while there was something special about each situation, certain patterns emerged as the most common reasons for the failure of a group to innovate successfully. Three merit specific mention:

1. FIXATION ON AN IDEA

When a team leader, irrespective of functional role, is a Plant/Specialist (refer to chart for a description of these terms) or a Shaper/Completer or some combination of the two, commitment to a particular idea or course of action can be overpowering. The price for that asset is often resistance to ideas of external origin (the "not invented here" syn-

2. Belbin Associates has sponsored a film addressing this notion, entitled "Building the Perfect Team." In the United States it is available through Video Arts.

drome). These people can also be unwilling or unable to backtrack on projects they have already started, leading to a heavy expenditure of time and effort on something that never becomes commercially viable or is obsolete before it is launched.

2. AN INABILITY TO DEVELOP A COHERENT PROGRAM

This is typical of circumstances where certain team roles are duplicated – especially Shapers or Plants – and there is no independent arbiter to resolve disputes. The outcome can be competition between incompatible ideas or goals that ends up revealing itself as conflict, indecision or in compromises that are worse than the original competing strategies.

3. A LACK OF PROMISING IDEAS OR SIGNS OF PROGRESS

Some initially well-balanced teams are disturbed by the promotion and loss of talented individuals. As an example, a large chemical company found that smaller competitors were more innovative. In reviewing their R&D teams, most of the members were Implementers, Completers and Specialists. It seems that the critical roles of Plants, Shapers and Resource Investigators were, in routine career moves, transferred to other positions within the company, leaving a vacuum of creative leadership. The company had focused on people as individuals without examining the viability of its design teams. There was an imbalance in the groups which essentially stymied progress.

By contrast, it is equally instructive to trace commercially successful inventions and developments back to their origins. University of Manchester Political Economy Professor John Jewkes' classic study, *The Sources of Invention*,³ demonstrates how much is owed to pairings or small groups of people working with very limited resources in the right sort of environment. Indeed, Jewkes notes that large corporations and well-qualified specialists appear to have a disappointing track record in introducing truly dramatic breakthroughs (although the big firms are quite capable of exploiting new products once those innovations have developed some initial momentum).

My own observations reinforce these hypotheses. On one occasion, I had the privilege of visiting a large pharmaceutical company's multi-story research center. The organization was concerned because, in spite of enormous resources devoted to research, the output of commercially viable products was diminishing. This investment was possible because of the huge profits that flowed in from the sale of a single drug, and managers were hoping to make other discoveries that would duplicate that success. After detailed study, it became apparent that the best-selling drug had been developed by only

two people. One was a creative researcher who happened to suffer from the affliction for which the drug acted as treatment, and the other was an assistant with a special flair for liaison activities. The story behind the development of the product indicated that many of the traditional procedures regarded as standard in the pharmaceutical business had been short-circuited. Breaking the rules, rather than institutionalizing them, had proven to be one of the most effective ways to make progress.

Based on this and other scenarios with positive results, I have come to believe that successful innovation is associated with three essential and very human attributes:

1. AN ALLIANCE BETWEEN A GENIUS AND AN ORCHESTRATOR

Creative inventors or designers are frequently poor at self-promotion. And even when this is not the case, self-promotion of a design or product is difficult since outsiders are not always able to distinguish between true merit and self-interest. The ideal combination – which not uncommonly comes about by chance – is a partnership between the imaginative problem solver and the patient and confident organizer – in team role language, between a Superplant and a Coordinator.

2. A WELL-BALANCED TEAM

Many companies seek out clones. That is to say, they identify the type of person they believe to be successful and then recruit individuals who fall into that pattern. What managers and designers must keep in mind is that the best results may come from just the opposite strategy. The most creative teams are not those with the most creative people, but rather those with the most diverse group of perspectives, where diversity is associated with complementary strengths. Effectiveness is enhanced when there is a good mix of roles in combination with a mutual respect for the relative strengths of each of the team members.

3. THE SOCIALLY VERSATILE TEAM

Some individuals are naturally good at liaison work and perform best when they are interacting with others. This is especially so for Resource Investigators, Coordinators and Team Workers, who should have a talent for adjusting their behavior to tackle each phase of a complex project in a manner that generates the optimum results. Such flexibility is a hallmark of innovative teams.

3. See John Jewkes, *The Sources of Invention* (London: MacMillan, 1961).



An Overview of the Design and Development Process

There is a well-known saying in the UK: "Invented in Britain, developed in the United States, manufactured in Japan." If there is any truth to the observation, it serves as a comment that, perhaps for cultural reasons, there are certain parts of what should be a continuous process that are not well served in each of these countries. Originality of thought is highly valued in Britain, dynamism in the USA and coordinated, disciplined behavior in Japan.

Of course they are all valuable attributes. The problem arises when the forces of cultural conformism are inappropriate to a particular mode of operation. The remedy is to move away from standard behavior and to compose teams that are designed to meet a specific need at a specific time. In other words, beyond the familiar and inanimate context of products and services, design must be applied to the complex world of human affairs. Design, like quality, is all about fitness for purpose. Unless teams are designed to engage in new ventures or to bring to fruition long-standing projects, success will remain what it has always been in the past – a sporadic and chancy affair. ♦

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