

## **A CONFUSION OF TONGUES: DESIGN MANAGEMENT THINKING**

*"They speak, that is, from what I have called incommensurable viewpoints.*

*How can they even hope to talk together much less to be persuasive."*

Thomas S. Kuhn (1970. p.200)

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

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## **Abstract**

Design's long drawn out occasionally frustrating dialogue with management may be drawing to a successful close. Increasing discussion among management scholars and practitioners suggest that a climate that is more amenable to design's arguments concerning its role in business ventures may be emerging. This paper provides an overview of some of those discussions concluding with a brief description of a potentially constructive way to consider if not resolve some of the more intractable issues in an academic setting.

## **Introduction**

In all but a few exemplary cases it would be charitable to characterize the relationship between design and management as strained. That is because design seeks to unleash the unsettling specters of innovation and change whereas management seeks to curb all that which might disturb its mandate of command and control. Whether the issue is culture, financial management, processes and practices or any of a myriad of others, the strains continue to bedevil theorists and practitioners of design management in their efforts to devise means to improve the relationship. Furthermore, rather than succeeding, many of the attempts to achieve more desirable relationships between design and management have seemed to be emphasizing the differences if not failing outright (Walton, 2002). Yet, as will be argued, there is reason to believe that, instead of design twisting itself into knots in attempts to satisfy the demands of the current, dominant "trusteeship" (Hay and Gray, 1976, p.136) or "rational" (Birnaum, 2001, p.29) culture of management, debates among management scholars and practitioners provide encouraging indications that an environment is emerging in which useful theories and practices of design management, based on its core principles and practices, can be developed.

## **Culture Clash**

Callaway (1990) succinctly characterized the culture problem in academic settings by observing that "... there is a gap between the collective cultures of the two groups... in management courses the product is taken for granted or ignored. In design courses, the physical object itself is central but the context of its production and marketing tends to be ignored." (Oakley, 1990, p.414). Extending those sentiments to the general case of creativity in business settings Amabile (1998) observed that "...creativity is undermined unintentionally every day in work environments that were established - for entirely good reasons - to maximize business imperatives such as coordination, productivity, and control." (p.77). Samsom and Gurdon (1993)

go even further describing the relationship between researchers and managers as a clash of cultures observing that “When these two cultures meet in a business venture what occurs frequently is for one group to implicitly demand that the other should embrace its value system.” (p.66). In no small part that is because the current dominant approach in most management education and practice, variously labeled "trusteeship" (Hay and Gray, 1976) or "rational" (Birnaum, 2001), is focused on satisfying owner/shareholders, largely ignoring a competitive environment that requires a balance between that and creativity, flexibility and innovation (Barkema et al., 2002, p.919). Unfortunately, as Leavitt (1989) observed, MBA programs continue to prepare "critters with lopsided brains, icy hearts, and shrunken souls" (p.39) to inhabit the trustee-manager positions.

Compounding the clash of cultures between creative performers and trusteeship or rational style managers is the concept of fiduciary duty according to which "...professionals are obliged to put the interests of their clients before their own..." (Paskell-Mede, 2004, p.44). But, as Raelin (1986) points out, professionals “maintain marginal loyalty to the organization, preferring instead to align themselves for the purposes of recognition and evaluation with their professional colleagues and associations” (p.2).

These pessimistic observations can lead to the conclusion that, rather than encouraging reconciliation of the differences between design and business, continued efforts to find a useful common purpose will only serve to reinforce that which verges on the incommensurable. Fortunately, scholars and practitioners of business management are beginning to question the dominant view that business education should be exclusively dedicated to the production of Leavitt's critters. Numerous authors including Mintzberg and Gosling (2002), Pfeffer and Fong (2002) and Samuelson (2006) describe and report on emerging, more nuanced approaches to business management education and practice that contest the dominant trustee/rational culture. These alternatives to Leavitt's critters focus on not only the needs of the owner/shareholders but also the needs of the organization, its members and its users. As can be expected the emerging shift is encountering great resistance (Sadler-Smith and Shefy, 2007; Learmonth, 2007). Samuelson (2006) observed that, "The reality, of course, is that the relevant courses and practitioners are too often marginalized into a “do-gooder” fringe" (p.364). But, even though "too often marginalized", increasing signals of a shift in management culture towards one more amenable to design's concerns offers potential that should not be ignored.

## **Skewed Decision Making**

Many issues concerning the management of design costs play significant roles in the marginalization of design. Among those are risk assessment techniques and the financial and personal impact of accounting policies. Business employs a vast array of financial modeling techniques; Discounted Cash Flow (DCF), Internal Rate of Return (IRR), Capital Asset Pricing Model (CAPM), to determine the risk and opportunity of investments. DCF, for example is based on the key assumptions that cash flows and discount rates can be accurately estimated (Timmons, 1999). In cases exhibiting limited innovation such an approach is reasonable but in cases of new, innovative business activity neither key assumption holds resulting in suboptimal outcomes (Crawford, 1986).

Despite commendable efforts by Rich (2005) to demonstrate connections between design's services and the financial successes (or failures) of its clients, the intimate financial details that are required to capture, understand and manage the relationship are not readily available. As Bedford et al. (2006, p.56) observed "...when examining a product's performance, the related industrial design investment has long been off the books." That is because, as Sutton (1991) points out, orthodox financial accounting practice stipulates that past development costs are lost outflows (sunk costs) and should not be considered when making decisions about future investments. The belief is that investment decisions should be influenced only by the potential profit that may be realized from the investment itself and not the impact of the prior outflows (Crawford, 1986, p.452; Timmons, 1999, p.322). Consequently design, involved as it is in the earliest phases of new product/service development, has little if any lasting evidence of its impact on success (or failure).

Finally, in addition to eliminating a useful source of information for the evaluation of design efforts, assigning design costs to sunk costs has, more pernicious influence. According to Ulrich and Eppinger (1995) "sunk costs are only relevant to the manager who sunk them" (p.256). Unfortunately the managers so affected are quite often critical actors in new product development programs. Sunk costs, especially those related to failures, accruing to a manager's record can result in a heightened degree of risk-averse decision making to avoid adverse personal impacts (Brockner, 1992).

Although this perfect storm of rationality and objectivity might seem to be an insurmountable hurdle, discussions abound about the negative impacts of inappropriate financial modeling techniques and assigning development costs to sunk costs. Crawford (1986) argues that one reason for maintaining a record reflecting a true accounting of the costs of developing new products is that "they are essential for the last evaluation, some time

after the product has gone to market" (p.452). Adler (2006), discussing financial-model-based decision making, points out that "Creating the next great thing demands constant innovation; it's a design task, not merely an analytical or administrative function" (p.490). Even Demming (1986), perceived to be a staunch advocate of statistical evaluation of management activity, advised that business should "[e]liminate numerical goals, numerical quotas and management by objectives." (chap. 2). Timmons (1999) pointed out " The numbers may be there, the trends may be identified, but the connections and interdependencies between financial structure and business decisions inherent in key financial questions may be missed" (p.413). Nichols (1993), discussing the theories that underlie the financial decisions that so severely impact innovative activity, observed that "despite tidy theories, there may be no single answer in a global economy" (p.52). In sum the errors and skewed decisions arising from the application of inappropriate financial models and analysis techniques to innovative business and design activity are giving rise to considerable debate and possibly a more advantaged future for design.

### **Practices and Processes**

After many years of challenging practitioners, educators and students of management and design to gain understanding of, if not develop competence in, the other's disciplinary processes and practices it is becoming apparent that mutual immune responses have resulted in only limited inroads being achieved (Walton, 2002). As Walton points out "Individuals still champion and articulate the value of design management, but it has become increasingly difficult to leverage this enthusiasm into a distinctive academic discipline" (p.6). Consequently some business theorists, educators and practitioners, believing that it is necessary to move beyond the traditional managerial and rational models (Birnbaum, 2001), have advocated that management develop abilities that map very closely those abilities that are at the core of the design act.

Sadler-Smith and Shefy (2007) argue that "In educational and training settings managers should not be inculcated into an indiscriminate over reliance upon rationality; rather, they should be able to balance their rational capabilities with an intelligent and informed use of intuition" (p.187). Cunliffe (2002) suggests that managers, when evaluating their assumptions, should employ reflection in order to "learn in experience" rather than to "learn from experience". Raelin (2007) advocates the development of such abilities as "tacit knowledge, critical reflection, and mastery" (p.495) and goes on to point out that "The critical issue for an epistemology of practice seems to be not whether but when to introduce explicit instructions and reflection into the field to yield optimal performance" (p.500). Learmonth (2007) advocates Critical Management Education

(CME) to prepare managers to consider the "normally unexamined values and orientations of standard management education. Such orientations are criticized for tacitly serving the maintenance of economic systems based upon market competition and the interests of the people in charge of organizations - while appearing to be neutral and value-free" (p.109). Samuelson (2006) advocates equipping "managers with the analytical and conceptual skills to think far outside the gate rather than at the enterprise level, to see new connections between social and environmental challenges on the one hand and firm-level growth and innovation on the other, and to plan far beyond the quarter and into the future" (p.356). Finally, Martin (2000) advocates "approaching management problems as designers approach design problems" (Dunne and Martin, 2006, p.512) by developing design thinking ability.

Although the arguments resonate with many current designers and design scholars (Buchanan, 1992; Owen, 1993; Beckman and Barry, 2007; Junginger, 2007) and lead one to conclude that management is changing from a trusteeship (Hay and Gray, 1974) or rational (Birnbaum, 2001) approach to one that may be more amenable to considering design as an integral partner issues remain. For example, it is yet to be seen if the changes will negatively or positively impact initiatives in design to develop theories and practices of design management or are just passing examples of the seeming inexhaustible ability of management to entertain fads (Brindle and Stearns, 2001; Birnbaum, 2001; Collins, 2000). On an optimistic note, even if only passing fads, it can be hoped that the residual effects (Collins, 2000) of those transitory events will have a lasting positive impact on the perceptions by management of innovation and design and it is to that possibility that this discussion will now turn.

## **A Useful Approach**

Assuming that the changes in management and will result in an environment that is amenable to design's case, one of the first questions has to be; Can this be capitalized on and if so how? Insight can be derived from some of the recent discussions in and about design education and practice. From a design education perspective Rothstein (2002) reports on a project based program at Arizona State University in which design and business students engage problems jointly and Alexis and Hassan (2007) describe a new dual MD/MBA program at Illinois Institute of Technology. Among the discussions concerning practice Chhatpar (2007) and Jacoby and Rodriguez (2007) describe ways to enhance strategic decision making by developing post-trusteeship approaches based on various combinations of design methods and business metrics, Richardson and Roy (2004) recommend the development of facility in discussing design in terms of ROI, market, retail channel, and product roadmaps and Gornick (2006) succinctly and

correctly suggests the need for clarification of the changing demands from management on design brought about by increasing emphasis on innovation.

These examples, which represent much of the discussion, exhibit four interesting characteristics. First, all consistently advocate that design, in order to respond to the increasing need for innovation, should adopt a more business-savvy stance in both practice and education. Second, the responses adopted to address that issue exhibit remarkable diversity in their initial conditions and consequent means devised. Third, for obvious reasons there is clear preference for managements that tend towards actual or potential innovation. Fourth there seemed to be only limited consideration of the possibility that among the various functional areas of management some areas may be more receptive to design's case than others and that raises an interesting possibility.

McMullan and Long (1990) observed that "For a time at least, every entrepreneur must be a designer" (p.305). Complimenting that observation, Dieter Rams, in a recent *Wallpaper* (2007) interview observed " I think you need a strong entrepreneurial vision for good design to be produced." In that same interview Fukasawa expanded on that observation by stating "The entrepreneur's vision has to be evident in all the design details. Having a design-oriented mind is not enough. The entrepreneur is essential in judging whether a designer's vision and his designs really fit with social developments. You cannot simply hire designers to produce products without having an entrepreneurial vision to understand how those designs might or might not work" (p.322).

At this juncture it should be made clear that the entrepreneurship referred to is not the managerial style of entrepreneurship taught in many business schools and practiced in many companies. According to Hughes (2006), "Most of today's courses on 'entrepreneurship' simply teach students how to apply core business methods to a new venture. They focus on "managerial" entrepreneurship, that is, what happens after the idea has already been developed. While these courses are important, it is vital to supplement them with classes that focus on innovation itself. 'Innovative' entrepreneurship course material needs to instruct students in the process of generating new ideas" (p.88). In part the reason for the lack that Hughes alludes to is that innovative entrepreneurship studies and practices exist, at least partially, beyond the comfort zone of the enduring and dominant trustee or rational ethos.

Given Hughes observations, the sentiments expressed by McMullan and Long and Rams and Fukasawa can be seen as presenting the possibility that innovative entrepreneurship, sharing with design the common cause of innovation, may provide design ready access to the halls of management. That supposition gains credence when some of the characteristics of innovative

entrepreneurship are considered. For example innovative entrepreneurs exhibit variations of Martin's (2006) recommended design thinking approach. Various labeled effectual reasoning (Sarasvathy, 2004), entrepreneurial thinking (Krueger, 2007) or counterfactual thinking and simulation building (Gaglio, 2004), innovative entrepreneurs employ modes of thinking to identify opportunities (Gaglio, 2004) and/or generate new ideas (Hughes, 2006) that bear a strong resemblance to those that designers employ to engage and reflect upon the vicissitudes of ill structured, ambiguous problems.

In addition to innovative entrepreneurs and designers sharing similar thinking modes most innovative entrepreneurship programs employ inquiry oriented, problem based learning models constructed around a mixture of live cases and projects. Students are encouraged to begin by reflecting upon and assessing the validity of the problems that they confront (Krueger, 2007; Gaglio, 2004). The structure, setting and processes employed in those inquiry oriented exercises would not be foreign to design students and educators and echo observations by Schön (1983), Buchanan (1992) and others concerning design pedagogy.

When it comes to accounting for their activities innovative entrepreneurs experience problems that are very similar to the already discussed problems encountered by designers. The tendency in the trusteeship managerial style is to enthusiastically apply blunt force financial modeling techniques and confounding sunk costs procedures resulting in decision making that is skewed to the detriment of many innovative entrepreneurial efforts (Timmons, 1999). It is little wonder that, as Steier and Greenwood (1995) found, entrepreneurs and venture capitalists subscribe to different (and potentially conflicting) rationalities when making decisions (p.351).

Finally, according to Gartner (1988) and Bygrave (1993) the objective of entrepreneurs is the creation of organizations and, according to McMullan and Long (1990), the purpose of designers is the creation of the goods and services that populate those organizations. That plus the already discussed shared modes of thinking, similar pedagogic practices and difficulties with blunt force financial techniques leads to the conclusion that design shares more with innovative entrepreneurship than just the jaundiced eye of trustee or rational management. One might also speculate that evidence of innovative entrepreneurship on the part of management may serve as an indicator for design firms seeking innovation oriented organizations with which to establish the complimentary, reciprocal relationship that Rams and Fukasawa (Wallpaper, 2007) suggest is necessary for design to flourish. But that is for another day and another paper.

## An Entrepreneurial Approach to Design Management Education

The potential of a complimentary reciprocal relationship between design and innovative entrepreneurship has provided the central premise and continuing guidance for the development and elaboration of a design management (DM) emphasis offered in the Faculty of Environmental Design (EVDS) at the University of Calgary. EVDS is predicated on interdisciplinarity allied to a strong intervention and applications orientation all of which have had a significant impact on the instigation and development of the DM emphasis.

The objective of the DM emphasis is to develop design manager-entrepreneurs capable of innovation and leadership. At the core of the emphasis is the Design Clinic in which students, working in teams on client-generated projects, develop Innovation Cases that provide integrated designs for organizations, products and services.

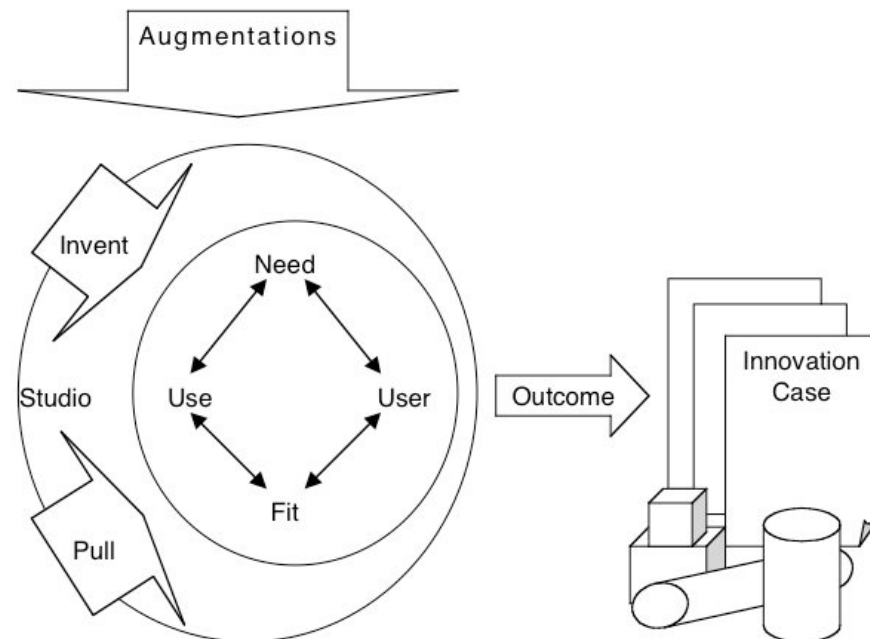


Figure 1. Relationships between and among Use/User, Need/Fit, Invent/Pull, Augmented Studio Environment and Innovation Case in the Design Clinic.

A key to the Clinic's effectiveness is a User Centered approach which is based on a complimentary Use/User concept in which a User includes not only the final consumer but also the designers, producers and sellers of products and services and Use ranges beyond simple functionality to include formal resolution, making, maintaining and retirement of the products and

services designed. Furthermore each Use and each User exhibits Needs and Fits in its relations with the other Uses and Users. Those notions are enacted through an Invent - Pull model which establishes a balance between the inventiveness of designers (Invent) and the needs and wants of consumers (Pull). These elements are integrated in an Augmented Studio Environment from which emerges an Innovation Case. The relationships are illustrated in Figure 1.

Students in the DM emphasis are graduate students with an eclectic mix of academic and professional experience including Industrial, Graphic and Interior Design, Architecture, Planning, Engineering, Sociology, Music, Political Science and beyond. Clinic preparation begins with an evaluation of the client's goals, time and financial investment and quality of the management team. Two project characteristics; the degree of novelty (organization or technology) and project scale are closely evaluated because they have been found to be inversely associated with successful outcomes. If a project is too large it can overwhelm the students and if too novel it can divert students from the pedagogic objectives.

Once a Clinic is launched students work in an Augmented Studio Environment which is interdisciplinary, project based and experiential; offered in a setting that is intense, immersive, synoptic and progressive; employing as needed both traditional critiques, coaching and facilitation as well as lectures, seminars, workshops, professional expertise and networks. During a two week introductory period student qualifications are explored, groups are organized, lectures and workshops on process and procedures are provided and mentors, advisors and experts as needed and appropriate are introduced.

Students work on the projects in a traditional design studio fashion, focusing on the formal implications of the problems, to begin building arguments that embody many descriptions and metrics that, with limited interpretation, can become the basis for market (User Needs and Fits) and technology (Use Needs and Fits) evaluations. Output consists of written, spoken and modeled concepts coupled to commercialization strategies including pro-forma financial statements. Final output is an Innovation Case that combines, as seamlessly as possible, the products of a design studio with that of a draft business plan. It has been noted by students, clients and participating professionals that what appears, at first glance, to be a potent recipe for disaster becomes a strength once the eclectic mix of personalities, processes, skills and knowledge available are recognized, appreciated, and engaged. Since its inception the Design Clinic has dealt with a wide variety of projects some of which have been successfully commercialized.

The most important outcomes of Clinic exercises are the students. Discussions with former students indicate that, rather than limiting their options, the development of understanding of the relationship between design and business management serves to liberate them by providing

an increased appreciation for usefulness of their design skills and a consequent greater self assurance and mastery in planning and execution of design projects. This has resulted in start-ups of consultancies and design-build operations. Of more immediate interest for many of the students is the establishment of continuing relationships with clients and participating professionals that often result in offers of employment.

## **Summary and Conclusions**

This discussion opened with a brief somewhat pessimistic overview of some of the issues confronting theorists, educators and practitioners of design management. Chief among those issues is the current, dominant trustee culture of management which, in most reasonable and rational terms, serves to frustrate innovative activity. The discussion then turned to current debates in management that offer alternatives that, even if only fads, suggest the potential of an environment that could be more amenable to the needs of developing a management dimension in design. It was then argued that innovative entrepreneurship as opposed to managerial entrepreneurship provides one useful candidate for the establishment of common cause between design and management. That was based on the observations that shared modes of thinking, pedagogic practices and ultimate purposes to name a few offer great potential for establishing a complimentary reciprocal relationship. The discussion closed with a description of a design management program that is based on capturing and developing those potentials as a means to prepare students to manage and lead design efforts.

In conclusion, rather than continuing to twist itself into knots attempting to satisfy the demands of the dominant trustee style of management, design might more profitably align itself with that dimension of business management, namely innovative entrepreneurship, that is closely associated with the core principles and practices of design. Prior to the recent ascendancy of managerial entrepreneurship Schumpeter (1934) observed that entrepreneurial activities are a process of creative destruction in which the creation of the new replaced the old. Surely such a fifth column, well placed within the house of management, are worthy allies with whom design could "talk together" (Kuhn, 1970) in the continuing process of innovation and change that is design.

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## **Biography**

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

2500 University Drive NW

Calgary, AB

T2N 1N4

Telephone: (403) 220 7440

Fax: (403) 284 4399

E-mail: [jogrady@ucalgary.ca](mailto:jogrady@ucalgary.ca)

James K. O'Grady, Associate Professor in and past director of the Industrial Design Program in the Faculty of Environmental Design at the University of Calgary, specializes in the practice and management of design. He has extensive international experience as a design consultant and educator having practiced, taught and studied design and design management in Canada, the United States and Great Britain. Prior to joining the University of Calgary in 1989 Dr. O'Grady was Chair of Design in the School of Art at Northern Illinois University, DeKalb Illinois and Director of Graduate Design Management Studies at Northern Illinois University's satellite campus in Chicago. He is a principal in O'Grady Design specializing in product design and the design, development and implementation of design management programs. Dr. O'Grady's academic credentials include a PhD in Entrepreneurship from the University of Calgary, an M. A. from the Department of Design Research, Royal College of Art, an M. B. A. from The Ohio State University, a B.A from the University of Guelph in Ontario, and an AOCAD in Industrial Design from the Ontario College of Art and Design.

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Thomas S. Kuhn (1970. p.200)

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

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## **Abstract**

Design's long drawn out occasionally frustrating dialogue with management may be drawing to a successful close. Increasing discussion among management scholars and practitioners suggest that a climate that is more amenable to design's arguments concerning its role in business ventures may be emerging. This paper provides an overview of some of those discussions concluding with a brief description of a potentially constructive way to consider if not resolve some of the more intractable issues in an academic setting.

## **Introduction**

In all but a few exemplary cases it would be charitable to characterize the relationship between design and management as strained. That is because design seeks to unleash the unsettling specters of innovation and change whereas management seeks to curb all that which might disturb its mandate of command and control. Whether the issue is culture, financial management, processes and practices or any of a myriad of others, the strains continue to bedevil theorists and practitioners of design management in their efforts to devise means to improve the relationship. Furthermore, rather than succeeding, many of the attempts to achieve more desirable relationships between design and management have seemed to be emphasizing the differences if not failing outright (Walton, 2002). Yet, as will be argued, there is reason to believe that, instead of design twisting itself into knots in attempts to satisfy the demands of the current, dominant "trusteeship" (Hay and Gray, 1976, p.136) or "rational" (Birnaum, 2001, p.29) culture of management, debates among management scholars and practitioners provide encouraging indications that an environment is emerging in which useful theories and practices of design management, based on its core principles and practices, can be developed.

## **Culture Clash**

Callaway (1990) succinctly characterized the culture problem in academic settings by observing that "... there is a gap between the collective cultures of the two groups... in management courses the product is taken for granted or ignored. In design courses, the physical object itself is central but the context of its production and marketing tends to be ignored." (Oakley, 1990, p.414). Extending those sentiments to the general case of creativity in business settings Amabile (1998) observed that "...creativity is undermined unintentionally every day in work environments that were established - for entirely good reasons - to maximize business imperatives such as coordination, productivity, and control." (p.77). Samsom and Gurdon (1993)

go even further describing the relationship between researchers and managers as a clash of cultures observing that “When these two cultures meet in a business venture what occurs frequently is for one group to implicitly demand that the other should embrace its value system.” (p.66). In no small part that is because the current dominant approach in most management education and practice, variously labeled "trusteeship" (Hay and Gray, 1976) or "rational" (Birnaum, 2001), is focused on satisfying owner/shareholders, largely ignoring a competitive environment that requires a balance between that and creativity, flexibility and innovation (Barkema et al., 2002, p.919). Unfortunately, as Leavitt (1989) observed, MBA programs continue to prepare "critters with lopsided brains, icy hearts, and shrunken souls" (p.39) to inhabit the trustee-manager positions.

Compounding the clash of cultures between creative performers and trusteeship or rational style managers is the concept of fiduciary duty according to which "...professionals are obliged to put the interests of their clients before their own..." (Paskell-Mede, 2004, p.44). But, as Raelin (1986) points out, professionals “maintain marginal loyalty to the organization, preferring instead to align themselves for the purposes of recognition and evaluation with their professional colleagues and associations” (p.2).

These pessimistic observations can lead to the conclusion that, rather than encouraging reconciliation of the differences between design and business, continued efforts to find a useful common purpose will only serve to reinforce that which verges on the incommensurable. Fortunately, scholars and practitioners of business management are beginning to question the dominant view that business education should be exclusively dedicated to the production of Leavitt's critters. Numerous authors including Mintzberg and Gosling (2002), Pfeffer and Fong (2002) and Samuelson (2006) describe and report on emerging, more nuanced approaches to business management education and practice that contest the dominant trustee/rational culture. These alternatives to Leavitt's critters focus on not only the needs of the owner/shareholders but also the needs of the organization, its members and its users. As can be expected the emerging shift is encountering great resistance (Sadler-Smith and Shefy, 2007; Learmonth, 2007). Samuelson (2006) observed that, "The reality, of course, is that the relevant courses and practitioners are too often marginalized into a “do-gooder” fringe" (p.364). But, even though "too often marginalized", increasing signals of a shift in management culture towards one more amenable to design's concerns offers potential that should not be ignored.

## **Skewed Decision Making**

Many issues concerning the management of design costs play significant roles in the marginalization of design. Among those are risk assessment techniques and the financial and personal impact of accounting policies. Business employs a vast array of financial modeling techniques; Discounted Cash Flow (DCF), Internal Rate of Return (IRR), Capital Asset Pricing Model (CAPM), to determine the risk and opportunity of investments. DCF, for example is based on the key assumptions that cash flows and discount rates can be accurately estimated (Timmons, 1999). In cases exhibiting limited innovation such an approach is reasonable but in cases of new, innovative business activity neither key assumption holds resulting in suboptimal outcomes (Crawford, 1986).

Despite commendable efforts by Rich (2005) to demonstrate connections between design's services and the financial successes (or failures) of its clients, the intimate financial details that are required to capture, understand and manage the relationship are not readily available. As Bedford et al. (2006, p.56) observed "...when examining a product's performance, the related industrial design investment has long been off the books." That is because, as Sutton (1991) points out, orthodox financial accounting practice stipulates that past development costs are lost outflows (sunk costs) and should not be considered when making decisions about future investments. The belief is that investment decisions should be influenced only by the potential profit that may be realized from the investment itself and not the impact of the prior outflows (Crawford, 1986, p.452; Timmons, 1999, p.322). Consequently design, involved as it is in the earliest phases of new product/service development, has little if any lasting evidence of its impact on success (or failure).

Finally, in addition to eliminating a useful source of information for the evaluation of design efforts, assigning design costs to sunk costs has, more pernicious influence. According to Ulrich and Eppinger (1995) "sunk costs are only relevant to the manager who sunk them" (p.256). Unfortunately the managers so affected are quite often critical actors in new product development programs. Sunk costs, especially those related to failures, accruing to a manager's record can result in a heightened degree of risk-averse decision making to avoid adverse personal impacts (Brockner, 1992).

Although this perfect storm of rationality and objectivity might seem to be an insurmountable hurdle, discussions abound about the negative impacts of inappropriate financial modeling techniques and assigning development costs to sunk costs. Crawford (1986) argues that one reason for maintaining a record reflecting a true accounting of the costs of developing new products is that "they are essential for the last evaluation, some time

after the product has gone to market" (p.452). Adler (2006), discussing financial-model-based decision making, points out that "Creating the next great thing demands constant innovation; it's a design task, not merely an analytical or administrative function" (p.490). Even Demming (1986), perceived to be a staunch advocate of statistical evaluation of management activity, advised that business should "[e]liminate numerical goals, numerical quotas and management by objectives." (chap. 2). Timmons (1999) pointed out " The numbers may be there, the trends may be identified, but the connections and interdependencies between financial structure and business decisions inherent in key financial questions may be missed" (p.413). Nichols (1993), discussing the theories that underlie the financial decisions that so severely impact innovative activity, observed that "despite tidy theories, there may be no single answer in a global economy" (p.52). In sum the errors and skewed decisions arising from the application of inappropriate financial models and analysis techniques to innovative business and design activity are giving rise to considerable debate and possibly a more advantaged future for design.

### **Practices and Processes**

After many years of challenging practitioners, educators and students of management and design to gain understanding of, if not develop competence in, the other's disciplinary processes and practices it is becoming apparent that mutual immune responses have resulted in only limited inroads being achieved (Walton, 2002). As Walton points out "Individuals still champion and articulate the value of design management, but it has become increasingly difficult to leverage this enthusiasm into a distinctive academic discipline" (p.6). Consequently some business theorists, educators and practitioners, believing that it is necessary to move beyond the traditional managerial and rational models (Birnbaum, 2001), have advocated that management develop abilities that map very closely those abilities that are at the core of the design act.

Sadler-Smith and Shefy (2007) argue that "In educational and training settings managers should not be inculcated into an indiscriminate over reliance upon rationality; rather, they should be able to balance their rational capabilities with an intelligent and informed use of intuition" (p.187). Cunliffe (2002) suggests that managers, when evaluating their assumptions, should employ reflection in order to "learn in experience" rather than to "learn from experience". Raelin (2007) advocates the development of such abilities as "tacit knowledge, critical reflection, and mastery" (p.495) and goes on to point out that "The critical issue for an epistemology of practice seems to be not whether but when to introduce explicit instructions and reflection into the field to yield optimal performance" (p.500). Learmonth (2007) advocates Critical Management Education

(CME) to prepare managers to consider the "normally unexamined values and orientations of standard management education. Such orientations are criticized for tacitly serving the maintenance of economic systems based upon market competition and the interests of the people in charge of organizations - while appearing to be neutral and value-free" (p.109). Samuelson (2006) advocates equipping "managers with the analytical and conceptual skills to think far outside the gate rather than at the enterprise level, to see new connections between social and environmental challenges on the one hand and firm-level growth and innovation on the other, and to plan far beyond the quarter and into the future" (p.356). Finally, Martin (2000) advocates "approaching management problems as designers approach design problems" (Dunne and Martin, 2006, p.512) by developing design thinking ability.

Although the arguments resonate with many current designers and design scholars (Buchanan, 1992; Owen, 1993; Beckman and Barry, 2007; Junginger, 2007) and lead one to conclude that management is changing from a trusteeship (Hay and Gray, 1974) or rational (Birnbaum, 2001) approach to one that may be more amenable to considering design as an integral partner issues remain. For example, it is yet to be seen if the changes will negatively or positively impact initiatives in design to develop theories and practices of design management or are just passing examples of the seeming inexhaustible ability of management to entertain fads (Brindle and Stearns, 2001; Birnbaum, 2001; Collins, 2000). On an optimistic note, even if only passing fads, it can be hoped that the residual effects (Collins, 2000) of those transitory events will have a lasting positive impact on the perceptions by management of innovation and design and it is to that possibility that this discussion will now turn.

## **A Useful Approach**

Assuming that the changes in management and will result in an environment that is amenable to design's case, one of the first questions has to be; Can this be capitalized on and if so how? Insight can be derived from some of the recent discussions in and about design education and practice. From a design education perspective Rothstein (2002) reports on a project based program at Arizona State University in which design and business students engage problems jointly and Alexis and Hassan (2007) describe a new dual MD/MBA program at Illinois Institute of Technology. Among the discussions concerning practice Chhatpar (2007) and Jacoby and Rodriguez (2007) describe ways to enhance strategic decision making by developing post-trusteeship approaches based on various combinations of design methods and business metrics, Richardson and Roy (2004) recommend the development of facility in discussing design in terms of ROI, market, retail channel, and product roadmaps and Gornick (2006) succinctly and

correctly suggests the need for clarification of the changing demands from management on design brought about by increasing emphasis on innovation.

These examples, which represent much of the discussion, exhibit four interesting characteristics. First, all consistently advocate that design, in order to respond to the increasing need for innovation, should adopt a more business-savvy stance in both practice and education. Second, the responses adopted to address that issue exhibit remarkable diversity in their initial conditions and consequent means devised. Third, for obvious reasons there is clear preference for managements that tend towards actual or potential innovation. Fourth there seemed to be only limited consideration of the possibility that among the various functional areas of management some areas may be more receptive to design's case than others and that raises an interesting possibility.

McMullan and Long (1990) observed that "For a time at least, every entrepreneur must be a designer" (p.305). Complimenting that observation, Dieter Rams, in a recent *Wallpaper* (2007) interview observed " I think you need a strong entrepreneurial vision for good design to be produced." In that same interview Fukasawa expanded on that observation by stating "The entrepreneur's vision has to be evident in all the design details. Having a design-oriented mind is not enough. The entrepreneur is essential in judging whether a designer's vision and his designs really fit with social developments. You cannot simply hire designers to produce products without having an entrepreneurial vision to understand how those designs might or might not work" (p.322).

At this juncture it should be made clear that the entrepreneurship referred to is not the managerial style of entrepreneurship taught in many business schools and practiced in many companies. According to Hughes (2006), "Most of today's courses on 'entrepreneurship' simply teach students how to apply core business methods to a new venture. They focus on "managerial" entrepreneurship, that is, what happens after the idea has already been developed. While these courses are important, it is vital to supplement them with classes that focus on innovation itself. 'Innovative' entrepreneurship course material needs to instruct students in the process of generating new ideas" (p.88). In part the reason for the lack that Hughes alludes to is that innovative entrepreneurship studies and practices exist, at least partially, beyond the comfort zone of the enduring and dominant trustee or rational ethos.

Given Hughes observations, the sentiments expressed by McMullan and Long and Rams and Fukasawa can be seen as presenting the possibility that innovative entrepreneurship, sharing with design the common cause of innovation, may provide design ready access to the halls of management. That supposition gains credence when some of the characteristics of innovative

entrepreneurship are considered. For example innovative entrepreneurs exhibit variations of Martin's (2006) recommended design thinking approach. Various labeled effectual reasoning (Sarasvathy, 2004), entrepreneurial thinking (Krueger, 2007) or counterfactual thinking and simulation building (Gaglio, 2004), innovative entrepreneurs employ modes of thinking to identify opportunities (Gaglio, 2004) and/or generate new ideas (Hughes, 2006) that bear a strong resemblance to those that designers employ to engage and reflect upon the vicissitudes of ill structured, ambiguous problems.

In addition to innovative entrepreneurs and designers sharing similar thinking modes most innovative entrepreneurship programs employ inquiry oriented, problem based learning models constructed around a mixture of live cases and projects. Students are encouraged to begin by reflecting upon and assessing the validity of the problems that they confront (Krueger, 2007; Gaglio, 2004). The structure, setting and processes employed in those inquiry oriented exercises would not be foreign to design students and educators and echo observations by Schön (1983), Buchanan (1992) and others concerning design pedagogy.

When it comes to accounting for their activities innovative entrepreneurs experience problems that are very similar to the already discussed problems encountered by designers. The tendency in the trusteeship managerial style is to enthusiastically apply blunt force financial modeling techniques and confounding sunk costs procedures resulting in decision making that is skewed to the detriment of many innovative entrepreneurial efforts (Timmons, 1999). It is little wonder that, as Steier and Greenwood (1995) found, entrepreneurs and venture capitalists subscribe to different (and potentially conflicting) rationalities when making decisions (p.351).

Finally, according to Gartner (1988) and Bygrave (1993) the objective of entrepreneurs is the creation of organizations and, according to McMullan and Long (1990), the purpose of designers is the creation of the goods and services that populate those organizations. That plus the already discussed shared modes of thinking, similar pedagogic practices and difficulties with blunt force financial techniques leads to the conclusion that design shares more with innovative entrepreneurship than just the jaundiced eye of trustee or rational management. One might also speculate that evidence of innovative entrepreneurship on the part of management may serve as an indicator for design firms seeking innovation oriented organizations with which to establish the complimentary, reciprocal relationship that Rams and Fukasawa (Wallpaper, 2007) suggest is necessary for design to flourish. But that is for another day and another paper.

## An Entrepreneurial Approach to Design Management Education

The potential of a complimentary reciprocal relationship between design and innovative entrepreneurship has provided the central premise and continuing guidance for the development and elaboration of a design management (DM) emphasis offered in the Faculty of Environmental Design (EVDS) at the University of Calgary. EVDS is predicated on interdisciplinarity allied to a strong intervention and applications orientation all of which have had a significant impact on the instigation and development of the DM emphasis.

The objective of the DM emphasis is to develop design manager-entrepreneurs capable of innovation and leadership. At the core of the emphasis is the Design Clinic in which students, working in teams on client-generated projects, develop Innovation Cases that provide integrated designs for organizations, products and services.

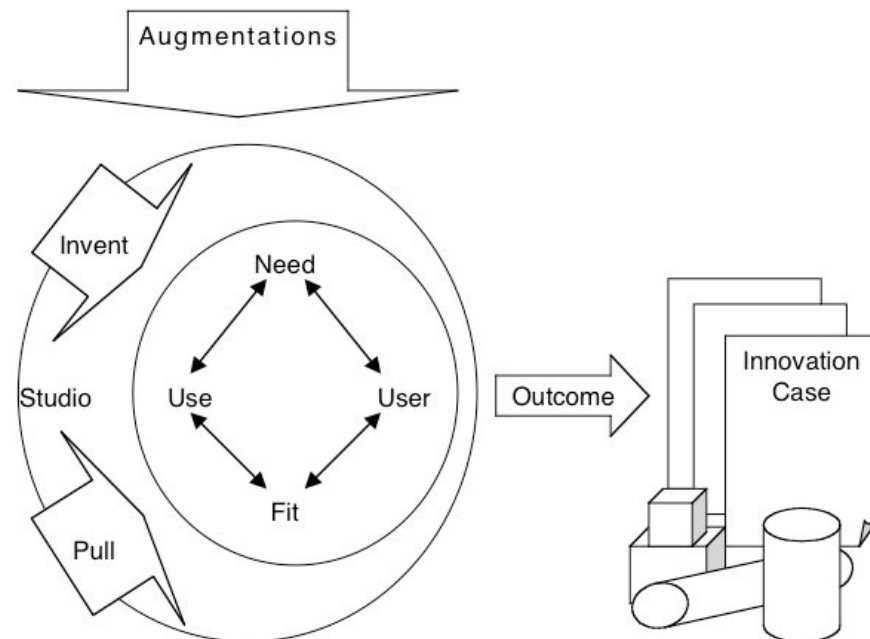


Figure 1. Relationships between and among Use/User, Need/Fit, Invent/Pull, Augmented Studio Environment and Innovation Case in the Design Clinic.

A key to the Clinic's effectiveness is a User Centered approach which is based on a complimentary Use/User concept in which a User includes not only the final consumer but also the designers, producers and sellers of products and services and Use ranges beyond simple functionality to include formal resolution, making, maintaining and retirement of the products and

services designed. Furthermore each Use and each User exhibits Needs and Fits in its relations with the other Uses and Users. Those notions are enacted through an Invent - Pull model which establishes a balance between the inventiveness of designers (Invent) and the needs and wants of consumers (Pull). These elements are integrated in an Augmented Studio Environment from which emerges an Innovation Case. The relationships are illustrated in Figure 1.

Students in the DM emphasis are graduate students with an eclectic mix of academic and professional experience including Industrial, Graphic and Interior Design, Architecture, Planning, Engineering, Sociology, Music, Political Science and beyond. Clinic preparation begins with an evaluation of the client's goals, time and financial investment and quality of the management team. Two project characteristics; the degree of novelty (organization or technology) and project scale are closely evaluated because they have been found to be inversely associated with successful outcomes. If a project is too large it can overwhelm the students and if too novel it can divert students from the pedagogic objectives.

Once a Clinic is launched students work in an Augmented Studio Environment which is interdisciplinary, project based and experiential; offered in a setting that is intense, immersive, synoptic and progressive; employing as needed both traditional critiques, coaching and facilitation as well as lectures, seminars, workshops, professional expertise and networks. During a two week introductory period student qualifications are explored, groups are organized, lectures and workshops on process and procedures are provided and mentors, advisors and experts as needed and appropriate are introduced.

Students work on the projects in a traditional design studio fashion, focusing on the formal implications of the problems, to begin building arguments that embody many descriptions and metrics that, with limited interpretation, can become the basis for market (User Needs and Fits) and technology (Use Needs and Fits) evaluations. Output consists of written, spoken and modeled concepts coupled to commercialization strategies including pro-forma financial statements. Final output is an Innovation Case that combines, as seamlessly as possible, the products of a design studio with that of a draft business plan. It has been noted by students, clients and participating professionals that what appears, at first glance, to be a potent recipe for disaster becomes a strength once the eclectic mix of personalities, processes, skills and knowledge available are recognized, appreciated, and engaged. Since its inception the Design Clinic has dealt with a wide variety of projects some of which have been successfully commercialized.

The most important outcomes of Clinic exercises are the students. Discussions with former students indicate that, rather than limiting their options, the development of understanding of the relationship between design and business management serves to liberate them by providing

an increased appreciation for usefulness of their design skills and a consequent greater self assurance and mastery in planning and execution of design projects. This has resulted in start-ups of consultancies and design-build operations. Of more immediate interest for many of the students is the establishment of continuing relationships with clients and participating professionals that often result in offers of employment.

## **Summary and Conclusions**

This discussion opened with a brief somewhat pessimistic overview of some of the issues confronting theorists, educators and practitioners of design management. Chief among those issues is the current, dominant trustee culture of management which, in most reasonable and rational terms, serves to frustrate innovative activity. The discussion then turned to current debates in management that offer alternatives that, even if only fads, suggest the potential of an environment that could be more amenable to the needs of developing a management dimension in design. It was then argued that innovative entrepreneurship as opposed to managerial entrepreneurship provides one useful candidate for the establishment of common cause between design and management. That was based on the observations that shared modes of thinking, pedagogic practices and ultimate purposes to name a few offer great potential for establishing a complimentary reciprocal relationship. The discussion closed with a description of a design management program that is based on capturing and developing those potentials as a means to prepare students to manage and lead design efforts.

In conclusion, rather than continuing to twist itself into knots attempting to satisfy the demands of the dominant trustee style of management, design might more profitably align itself with that dimension of business management, namely innovative entrepreneurship, that is closely associated with the core principles and practices of design. Prior to the recent ascendancy of managerial entrepreneurship Schumpeter (1934) observed that entrepreneurial activities are a process of creative destruction in which the creation of the new replaced the old. Surely such a fifth column, well placed within the house of management, are worthy allies with whom design could "talk together" (Kuhn, 1970) in the continuing process of innovation and change that is design.

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## **Biography**

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

2500 University Drive NW

Calgary, AB

T2N 1N4

Telephone: (403) 220 7440

Fax: (403) 284 4399

E-mail: [jogrady@ucalgary.ca](mailto:jogrady@ucalgary.ca)

James K. O'Grady, Associate Professor in and past director of the Industrial Design Program in the Faculty of Environmental Design at the University of Calgary, specializes in the practice and management of design. He has extensive international experience as a design consultant and educator having practiced, taught and studied design and design management in Canada, the United States and Great Britain. Prior to joining the University of Calgary in 1989 Dr. O'Grady was Chair of Design in the School of Art at Northern Illinois University, DeKalb Illinois and Director of Graduate Design Management Studies at Northern Illinois University's satellite campus in Chicago. He is a principal in O'Grady Design specializing in product design and the design, development and implementation of design management programs. Dr. O'Grady's academic credentials include a PhD in Entrepreneurship from the University of Calgary, an M. A. from the Department of Design Research, Royal College of Art, an M. B. A. from The Ohio State University, a B.A from the University of Guelph in Ontario, and an AOCAD in Industrial Design from the Ontario College of Art and Design.

## **A CONFUSION OF TONGUES: DESIGN MANAGEMENT THINKING**

*"They speak, that is, from what I have called incommensurable viewpoints.*

*How can they even hope to talk together much less to be persuasive."*

Thomas S. Kuhn (1970. p.200)

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

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## **Abstract**

Design's long drawn out occasionally frustrating dialogue with management may be drawing to a successful close. Increasing discussion among management scholars and practitioners suggest that a climate that is more amenable to design's arguments concerning its role in business ventures may be emerging. This paper provides an overview of some of those discussions concluding with a brief description of a potentially constructive way to consider if not resolve some of the more intractable issues in an academic setting.

## **Introduction**

In all but a few exemplary cases it would be charitable to characterize the relationship between design and management as strained. That is because design seeks to unleash the unsettling specters of innovation and change whereas management seeks to curb all that which might disturb its mandate of command and control. Whether the issue is culture, financial management, processes and practices or any of a myriad of others, the strains continue to bedevil theorists and practitioners of design management in their efforts to devise means to improve the relationship. Furthermore, rather than succeeding, many of the attempts to achieve more desirable relationships between design and management have seemed to be emphasizing the differences if not failing outright (Walton, 2002). Yet, as will be argued, there is reason to believe that, instead of design twisting itself into knots in attempts to satisfy the demands of the current, dominant "trusteeship" (Hay and Gray, 1976, p.136) or "rational" (Birnaum, 2001, p.29) culture of management, debates among management scholars and practitioners provide encouraging indications that an environment is emerging in which useful theories and practices of design management, based on its core principles and practices, can be developed.

## **Culture Clash**

Callaway (1990) succinctly characterized the culture problem in academic settings by observing that "... there is a gap between the collective cultures of the two groups... in management courses the product is taken for granted or ignored. In design courses, the physical object itself is central but the context of its production and marketing tends to be ignored." (Oakley, 1990, p.414). Extending those sentiments to the general case of creativity in business settings Amabile (1998) observed that "...creativity is undermined unintentionally every day in work environments that were established - for entirely good reasons - to maximize business imperatives such as coordination, productivity, and control." (p.77). Samsom and Gurdon (1993)

go even further describing the relationship between researchers and managers as a clash of cultures observing that “When these two cultures meet in a business venture what occurs frequently is for one group to implicitly demand that the other should embrace its value system.” (p.66). In no small part that is because the current dominant approach in most management education and practice, variously labeled "trusteeship" (Hay and Gray, 1976) or "rational" (Birnaum, 2001), is focused on satisfying owner/shareholders, largely ignoring a competitive environment that requires a balance between that and creativity, flexibility and innovation (Barkema et al., 2002, p.919). Unfortunately, as Leavitt (1989) observed, MBA programs continue to prepare "critters with lopsided brains, icy hearts, and shrunken souls" (p.39) to inhabit the trustee-manager positions.

Compounding the clash of cultures between creative performers and trusteeship or rational style managers is the concept of fiduciary duty according to which "...professionals are obliged to put the interests of their clients before their own..." (Paskell-Mede, 2004, p.44). But, as Raelin (1986) points out, professionals “maintain marginal loyalty to the organization, preferring instead to align themselves for the purposes of recognition and evaluation with their professional colleagues and associations” (p.2).

These pessimistic observations can lead to the conclusion that, rather than encouraging reconciliation of the differences between design and business, continued efforts to find a useful common purpose will only serve to reinforce that which verges on the incommensurable. Fortunately, scholars and practitioners of business management are beginning to question the dominant view that business education should be exclusively dedicated to the production of Leavitt's critters. Numerous authors including Mintzberg and Gosling (2002), Pfeffer and Fong (2002) and Samuelson (2006) describe and report on emerging, more nuanced approaches to business management education and practice that contest the dominant trustee/rational culture. These alternatives to Leavitt's critters focus on not only the needs of the owner/shareholders but also the needs of the organization, its members and its users. As can be expected the emerging shift is encountering great resistance (Sadler-Smith and Shefy, 2007; Learmonth, 2007). Samuelson (2006) observed that, "The reality, of course, is that the relevant courses and practitioners are too often marginalized into a “do-gooder” fringe" (p.364). But, even though "too often marginalized", increasing signals of a shift in management culture towards one more amenable to design's concerns offers potential that should not be ignored.

## Skewed Decision Making

Many issues concerning the management of design costs play significant roles in the marginalization of design. Among those are risk assessment techniques and the financial and personal impact of accounting policies. Business employs a vast array of financial modeling techniques; Discounted Cash Flow (DCF), Internal Rate of Return (IRR), Capital Asset Pricing Model (CAPM), to determine the risk and opportunity of investments. DCF, for example is based on the key assumptions that cash flows and discount rates can be accurately estimated (Timmons, 1999). In cases exhibiting limited innovation such an approach is reasonable but in cases of new, innovative business activity neither key assumption holds resulting in suboptimal outcomes (Crawford, 1986).

Despite commendable efforts by Rich (2005) to demonstrate connections between design's services and the financial successes (or failures) of its clients, the intimate financial details that are required to capture, understand and manage the relationship are not readily available. As Bedford et al. (2006, p.56) observed "...when examining a product's performance, the related industrial design investment has long been off the books." That is because, as Sutton (1991) points out, orthodox financial accounting practice stipulates that past development costs are lost outflows (sunk costs) and should not be considered when making decisions about future investments. The belief is that investment decisions should be influenced only by the potential profit that may be realized from the investment itself and not the impact of the prior outflows (Crawford, 1986, p.452; Timmons, 1999, p.322). Consequently design, involved as it is in the earliest phases of new product/service development, has little if any lasting evidence of its impact on success (or failure).

Finally, in addition to eliminating a useful source of information for the evaluation of design efforts, assigning design costs to sunk costs has, more pernicious influence. According to Ulrich and Eppinger (1995) "sunk costs are only relevant to the manager who sunk them" (p.256). Unfortunately the managers so affected are quite often critical actors in new product development programs. Sunk costs, especially those related to failures, accruing to a manager's record can result in a heightened degree of risk-averse decision making to avoid adverse personal impacts (Brockner, 1992).

Although this perfect storm of rationality and objectivity might seem to be an insurmountable hurdle, discussions abound about the negative impacts of inappropriate financial modeling techniques and assigning development costs to sunk costs. Crawford (1986) argues that one reason for maintaining a record reflecting a true accounting of the costs of developing new products is that "they are essential for the last evaluation, some time

after the product has gone to market" (p.452). Adler (2006), discussing financial-model-based decision making, points out that "Creating the next great thing demands constant innovation; it's a design task, not merely an analytical or administrative function" (p.490). Even Demming (1986), perceived to be a staunch advocate of statistical evaluation of management activity, advised that business should "[e]liminate numerical goals, numerical quotas and management by objectives." (chap. 2). Timmons (1999) pointed out " The numbers may be there, the trends may be identified, but the connections and interdependencies between financial structure and business decisions inherent in key financial questions may be missed" (p.413). Nichols (1993), discussing the theories that underlie the financial decisions that so severely impact innovative activity, observed that "despite tidy theories, there may be no single answer in a global economy" (p.52). In sum the errors and skewed decisions arising from the application of inappropriate financial models and analysis techniques to innovative business and design activity are giving rise to considerable debate and possibly a more advantaged future for design.

### **Practices and Processes**

After many years of challenging practitioners, educators and students of management and design to gain understanding of, if not develop competence in, the other's disciplinary processes and practices it is becoming apparent that mutual immune responses have resulted in only limited inroads being achieved (Walton, 2002). As Walton points out "Individuals still champion and articulate the value of design management, but it has become increasingly difficult to leverage this enthusiasm into a distinctive academic discipline" (p.6). Consequently some business theorists, educators and practitioners, believing that it is necessary to move beyond the traditional managerial and rational models (Birnbaum, 2001), have advocated that management develop abilities that map very closely those abilities that are at the core of the design act.

Sadler-Smith and Shefy (2007) argue that "In educational and training settings managers should not be inculcated into an indiscriminate over reliance upon rationality; rather, they should be able to balance their rational capabilities with an intelligent and informed use of intuition" (p.187). Cunliffe (2002) suggests that managers, when evaluating their assumptions, should employ reflection in order to "learn in experience" rather than to "learn from experience". Raelin (2007) advocates the development of such abilities as "tacit knowledge, critical reflection, and mastery" (p.495) and goes on to point out that "The critical issue for an epistemology of practice seems to be not whether but when to introduce explicit instructions and reflection into the field to yield optimal performance" (p.500). Learmonth (2007) advocates Critical Management Education

(CME) to prepare managers to consider the "normally unexamined values and orientations of standard management education. Such orientations are criticized for tacitly serving the maintenance of economic systems based upon market competition and the interests of the people in charge of organizations - while appearing to be neutral and value-free" (p.109). Samuelson (2006) advocates equipping "managers with the analytical and conceptual skills to think far outside the gate rather than at the enterprise level, to see new connections between social and environmental challenges on the one hand and firm-level growth and innovation on the other, and to plan far beyond the quarter and into the future" (p.356). Finally, Martin (2000) advocates "approaching management problems as designers approach design problems" (Dunne and Martin, 2006, p.512) by developing design thinking ability.

Although the arguments resonate with many current designers and design scholars (Buchanan, 1992; Owen, 1993; Beckman and Barry, 2007; Junginger, 2007) and lead one to conclude that management is changing from a trusteeship (Hay and Gray, 1974) or rational (Birnbaum, 2001) approach to one that may be more amenable to considering design as an integral partner issues remain. For example, it is yet to be seen if the changes will negatively or positively impact initiatives in design to develop theories and practices of design management or are just passing examples of the seeming inexhaustible ability of management to entertain fads (Brindle and Stearns, 2001; Birnbaum, 2001; Collins, 2000). On an optimistic note, even if only passing fads, it can be hoped that the residual effects (Collins, 2000) of those transitory events will have a lasting positive impact on the perceptions by management of innovation and design and it is to that possibility that this discussion will now turn.

## **A Useful Approach**

Assuming that the changes in management and will result in an environment that is amenable to design's case, one of the first questions has to be; Can this be capitalized on and if so how? Insight can be derived from some of the recent discussions in and about design education and practice. From a design education perspective Rothstein (2002) reports on a project based program at Arizona State University in which design and business students engage problems jointly and Alexis and Hassan (2007) describe a new dual MD/MBA program at Illinois Institute of Technology. Among the discussions concerning practice Chhatpar (2007) and Jacoby and Rodriguez (2007) describe ways to enhance strategic decision making by developing post-trusteeship approaches based on various combinations of design methods and business metrics, Richardson and Roy (2004) recommend the development of facility in discussing design in terms of ROI, market, retail channel, and product roadmaps and Gornick (2006) succinctly and

correctly suggests the need for clarification of the changing demands from management on design brought about by increasing emphasis on innovation.

These examples, which represent much of the discussion, exhibit four interesting characteristics. First, all consistently advocate that design, in order to respond to the increasing need for innovation, should adopt a more business-savvy stance in both practice and education. Second, the responses adopted to address that issue exhibit remarkable diversity in their initial conditions and consequent means devised. Third, for obvious reasons there is clear preference for managements that tend towards actual or potential innovation. Fourth there seemed to be only limited consideration of the possibility that among the various functional areas of management some areas may be more receptive to design's case than others and that raises an interesting possibility.

McMullan and Long (1990) observed that "For a time at least, every entrepreneur must be a designer" (p.305). Complimenting that observation, Dieter Rams, in a recent *Wallpaper* (2007) interview observed " I think you need a strong entrepreneurial vision for good design to be produced." In that same interview Fukasawa expanded on that observation by stating "The entrepreneur's vision has to be evident in all the design details. Having a design-oriented mind is not enough. The entrepreneur is essential in judging whether a designer's vision and his designs really fit with social developments. You cannot simply hire designers to produce products without having an entrepreneurial vision to understand how those designs might or might not work" (p.322).

At this juncture it should be made clear that the entrepreneurship referred to is not the managerial style of entrepreneurship taught in many business schools and practiced in many companies. According to Hughes (2006), "Most of today's courses on 'entrepreneurship' simply teach students how to apply core business methods to a new venture. They focus on "managerial" entrepreneurship, that is, what happens after the idea has already been developed. While these courses are important, it is vital to supplement them with classes that focus on innovation itself. 'Innovative' entrepreneurship course material needs to instruct students in the process of generating new ideas" (p.88). In part the reason for the lack that Hughes alludes to is that innovative entrepreneurship studies and practices exist, at least partially, beyond the comfort zone of the enduring and dominant trustee or rational ethos.

Given Hughes observations, the sentiments expressed by McMullan and Long and Rams and Fukasawa can be seen as presenting the possibility that innovative entrepreneurship, sharing with design the common cause of innovation, may provide design ready access to the halls of management. That supposition gains credence when some of the characteristics of innovative

entrepreneurship are considered. For example innovative entrepreneurs exhibit variations of Martin's (2006) recommended design thinking approach. Various labeled effectual reasoning (Sarasvathy, 2004), entrepreneurial thinking (Krueger, 2007) or counterfactual thinking and simulation building (Gaglio, 2004), innovative entrepreneurs employ modes of thinking to identify opportunities (Gaglio, 2004) and/or generate new ideas (Hughes, 2006) that bear a strong resemblance to those that designers employ to engage and reflect upon the vicissitudes of ill structured, ambiguous problems.

In addition to innovative entrepreneurs and designers sharing similar thinking modes most innovative entrepreneurship programs employ inquiry oriented, problem based learning models constructed around a mixture of live cases and projects. Students are encouraged to begin by reflecting upon and assessing the validity of the problems that they confront (Krueger, 2007; Gaglio, 2004). The structure, setting and processes employed in those inquiry oriented exercises would not be foreign to design students and educators and echo observations by Schön (1983), Buchanan (1992) and others concerning design pedagogy.

When it comes to accounting for their activities innovative entrepreneurs experience problems that are very similar to the already discussed problems encountered by designers. The tendency in the trusteeship managerial style is to enthusiastically apply blunt force financial modeling techniques and confounding sunk costs procedures resulting in decision making that is skewed to the detriment of many innovative entrepreneurial efforts (Timmons, 1999). It is little wonder that, as Steier and Greenwood (1995) found, entrepreneurs and venture capitalists subscribe to different (and potentially conflicting) rationalities when making decisions (p.351).

Finally, according to Gartner (1988) and Bygrave (1993) the objective of entrepreneurs is the creation of organizations and, according to McMullan and Long (1990), the purpose of designers is the creation of the goods and services that populate those organizations. That plus the already discussed shared modes of thinking, similar pedagogic practices and difficulties with blunt force financial techniques leads to the conclusion that design shares more with innovative entrepreneurship than just the jaundiced eye of trustee or rational management. One might also speculate that evidence of innovative entrepreneurship on the part of management may serve as an indicator for design firms seeking innovation oriented organizations with which to establish the complimentary, reciprocal relationship that Rams and Fukasawa (Wallpaper, 2007) suggest is necessary for design to flourish. But that is for another day and another paper.

## An Entrepreneurial Approach to Design Management Education

The potential of a complimentary reciprocal relationship between design and innovative entrepreneurship has provided the central premise and continuing guidance for the development and elaboration of a design management (DM) emphasis offered in the Faculty of Environmental Design (EVDS) at the University of Calgary. EVDS is predicated on interdisciplinarity allied to a strong intervention and applications orientation all of which have had a significant impact on the instigation and development of the DM emphasis.

The objective of the DM emphasis is to develop design manager-entrepreneurs capable of innovation and leadership. At the core of the emphasis is the Design Clinic in which students, working in teams on client-generated projects, develop Innovation Cases that provide integrated designs for organizations, products and services.

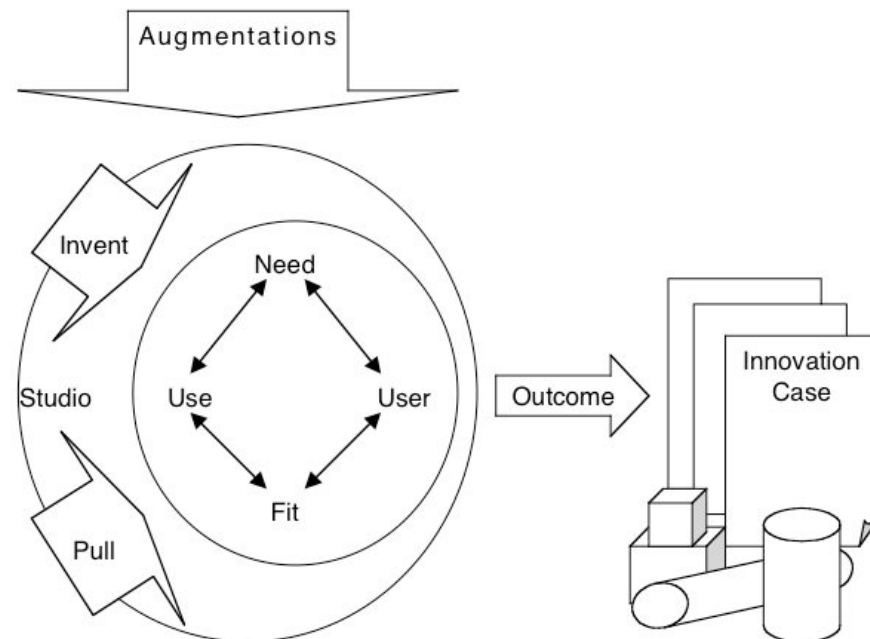


Figure 1. Relationships between and among Use/User, Need/Fit, Invent/Pull, Augmented Studio Environment and Innovation Case in the Design Clinic.

A key to the Clinic's effectiveness is a User Centered approach which is based on a complimentary Use/User concept in which a User includes not only the final consumer but also the designers, producers and sellers of products and services and Use ranges beyond simple functionality to include formal resolution, making, maintaining and retirement of the products and

services designed. Furthermore each Use and each User exhibits Needs and Fits in its relations with the other Uses and Users. Those notions are enacted through an Invent - Pull model which establishes a balance between the inventiveness of designers (Invent) and the needs and wants of consumers (Pull). These elements are integrated in an Augmented Studio Environment from which emerges an Innovation Case. The relationships are illustrated in Figure 1.

Students in the DM emphasis are graduate students with an eclectic mix of academic and professional experience including Industrial, Graphic and Interior Design, Architecture, Planning, Engineering, Sociology, Music, Political Science and beyond. Clinic preparation begins with an evaluation of the client's goals, time and financial investment and quality of the management team. Two project characteristics; the degree of novelty (organization or technology) and project scale are closely evaluated because they have been found to be inversely associated with successful outcomes. If a project is too large it can overwhelm the students and if too novel it can divert students from the pedagogic objectives.

Once a Clinic is launched students work in an Augmented Studio Environment which is interdisciplinary, project based and experiential; offered in a setting that is intense, immersive, synoptic and progressive; employing as needed both traditional critiques, coaching and facilitation as well as lectures, seminars, workshops, professional expertise and networks. During a two week introductory period student qualifications are explored, groups are organized, lectures and workshops on process and procedures are provided and mentors, advisors and experts as needed and appropriate are introduced.

Students work on the projects in a traditional design studio fashion, focusing on the formal implications of the problems, to begin building arguments that embody many descriptions and metrics that, with limited interpretation, can become the basis for market (User Needs and Fits) and technology (Use Needs and Fits) evaluations. Output consists of written, spoken and modeled concepts coupled to commercialization strategies including pro-forma financial statements. Final output is an Innovation Case that combines, as seamlessly as possible, the products of a design studio with that of a draft business plan. It has been noted by students, clients and participating professionals that what appears, at first glance, to be a potent recipe for disaster becomes a strength once the eclectic mix of personalities, processes, skills and knowledge available are recognized, appreciated, and engaged. Since its inception the Design Clinic has dealt with a wide variety of projects some of which have been successfully commercialized.

The most important outcomes of Clinic exercises are the students. Discussions with former students indicate that, rather than limiting their options, the development of understanding of the relationship between design and business management serves to liberate them by providing

an increased appreciation for usefulness of their design skills and a consequent greater self assurance and mastery in planning and execution of design projects. This has resulted in start-ups of consultancies and design-build operations. Of more immediate interest for many of the students is the establishment of continuing relationships with clients and participating professionals that often result in offers of employment.

## **Summary and Conclusions**

This discussion opened with a brief somewhat pessimistic overview of some of the issues confronting theorists, educators and practitioners of design management. Chief among those issues is the current, dominant trustee culture of management which, in most reasonable and rational terms, serves to frustrate innovative activity. The discussion then turned to current debates in management that offer alternatives that, even if only fads, suggest the potential of an environment that could be more amenable to the needs of developing a management dimension in design. It was then argued that innovative entrepreneurship as opposed to managerial entrepreneurship provides one useful candidate for the establishment of common cause between design and management. That was based on the observations that shared modes of thinking, pedagogic practices and ultimate purposes to name a few offer great potential for establishing a complimentary reciprocal relationship. The discussion closed with a description of a design management program that is based on capturing and developing those potentials as a means to prepare students to manage and lead design efforts.

In conclusion, rather than continuing to twist itself into knots attempting to satisfy the demands of the dominant trustee style of management, design might more profitably align itself with that dimension of business management, namely innovative entrepreneurship, that is closely associated with the core principles and practices of design. Prior to the recent ascendancy of managerial entrepreneurship Schumpeter (1934) observed that entrepreneurial activities are a process of creative destruction in which the creation of the new replaced the old. Surely such a fifth column, well placed within the house of management, are worthy allies with whom design could "talk together" (Kuhn, 1970) in the continuing process of innovation and change that is design.

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## **Biography**

James K. O'Grady, PhD

Associate Professor

Faculty of Environmental Design

The University of Calgary

2500 University Drive NW

Calgary, AB

T2N 1N4

Telephone: (403) 220 7440

Fax: (403) 284 4399

E-mail: [jogrady@ucalgary.ca](mailto:jogrady@ucalgary.ca)

James K. O'Grady, Associate Professor in and past director of the Industrial Design Program in the Faculty of Environmental Design at the University of Calgary, specializes in the practice and management of design. He has extensive international experience as a design consultant and educator having practiced, taught and studied design and design management in Canada, the United States and Great Britain. Prior to joining the University of Calgary in 1989 Dr. O'Grady was Chair of Design in the School of Art at Northern Illinois University, DeKalb Illinois and Director of Graduate Design Management Studies at Northern Illinois University's satellite campus in Chicago. He is a principal in O'Grady Design specializing in product design and the design, development and implementation of design management programs. Dr. O'Grady's academic credentials include a PhD in Entrepreneurship from the University of Calgary, an M. A. from the Department of Design Research, Royal College of Art, an M. B. A. from The Ohio State University, a B.A from the University of Guelph in Ontario, and an AOCAD in Industrial Design from the Ontario College of Art and Design.