Achieving responsible design within the commercial remit

This item was submitted to Loughborough University's Institutional Repository by the/an author.

Citation: STEVENSON, N. ... et al., 2014. Achieving responsible design within the commercial remit. IN: Bohemia, E. ... et al., (eds.) Proceedings of the 19th DMI: Academic Design Management Conference, London, UK, 2-4 September 2014, pp. 1580 - 1596.

Additional Information:

- This is a conference paper. The proceedings are available at: https://www.scribd.com/doc/238251719/The-19th-DMI-International-Design-Management-Research-Conference

Metadata Record: https://dspace.lboro.ac.uk/2134/16026

Version: Published

Publisher: The Design Management Institute © the Authors

Rights: This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: https://creativecommons.org/licenses/by-nc-nd/4.0/

Please cite the published version.
Achieving Responsible Design Within the Commercial Remit

Norman STEVENSON*a, Vicky LOFTHOUSE*a, Debra LILLEY*a and Alistair CHEYNEb

*a Loughborough Design School, Loughborough University; b School of Business and Economics, Loughborough University

Drawing on findings from research conducted in the UK and Ireland, this paper discusses what is required for responsible design goals; such as sustainable design, inclusive design and socially responsible design; to be addressed more widely within industrial design consulting. It posits that achieving an impact ultimately centres on commercial success, and to effect a positive change on society’s greater needs, therefore, design consultants must create persuasive and appealing solutions which meet the demands of the commercial context, and which fall within the expectations of the client and market. The paper explores the individual designer’s motivation and sense of responsibility to address society’s needs; along with the set of challenges facing the management and pursuit of design practice towards those goals. From this, a series of areas with potential to improve the spread of responsible design are highlighted; including: empowering designers to argue cases more effectively; increasing the design consultant’s sense of responsibility and intention to act; and improving the demand, recognition, and value these goals receive. The paper concludes that the success of commercial responsible design requires more sophisticated understanding, metrics and examples, which have greater relevance to business goals and the full set of participant parties.

Keywords: Responsible design; industrial design; design consultants; sustainable design, inclusive design; socially responsible design; social and sustainable design management

* Corresponding author: Norman Stevenson | e-mail: N.Stevenson@lboro.ac.uk

Copyright © 2014. Copyright in each paper in this conference’s proceedings is the property of the author(s). Permission is granted to reproduce copies of these works for purposes relevant to the above conference, provided that the author(s), source and copyright notice are included on each copy. For other uses, including extended quotation, please contact the author(s).
Introduction

Since its origins, industrial design has been dependent on industry for its raison d'être (Heskett, 1980; Sparke, 1983; Meikle, 2001); however, since the mid-twentieth century, concern for the designer’s role and tensions between serving commercialism or society have been evident, not least of all from designers themselves (Sparke, 1987; Whiteley, 1993). Author’s such as Papanek (1971), Whiteley (1993) and Pirkl (1994) advocated industrial design’s potential to have greater impact on larger societal issues; such as environmental concerns, ageing, disability, social inequalities, poverty, and diminishing quality of life. Recent growth in the awareness and exploration of these topics has reinforced the call for designers to exercise a positive influence beyond commercial goals. Ageing populations and the increasing number of older users are demanding that designers incorporate inclusivity and the needs of a wider population in their work. Similarly, the increasing importance assigned to social and environmental welfare, suggests that future designers will in part be required to refocus design more towards quality of life, sustainable systems and socialisation (Cooper et al., 2009; Lasky, 2013). However, while consultancies such as IDEO, Frog and Fuse Project have taken up the challenges to various extents, research has shown that for the most part larger societal issues are still extraneous to the daily activities of most industrial designers (Dong & Clarkson, 2007; Andrews & Robbins, 2010; Stevenson, 2013). This dulled response, and the misalignment between expectations and action, begs for further understanding as to:

- why more responsible design activities are not occurring;
- and what is required to bring about wider uptake.

This paper aims to address these queries with regard to industrial design consultants by presenting a discussion of the influences and challenges composing their circumstances.

Research Background and Methodology:

The discussion presented in this paper is based on the findings from an EPSRC (Engineering and Physical Sciences Research Council) funded doctoral research project which investigated what affects industrial design consultants addressing more responsible design goals within their commercial remits. The research was undertaken in the UK and Ireland and consisted of two main studies. The first was an explorative workshop which ran as part of a national seminar organised by the Sustainable Design Network. 19 participants from academia and design practice were involved; including 3 leading authors in...
the research field. Activities were primarily based around group discussion and were supported by a set of tools, including prompt cards and personas, developed from an extensive literature review. The second, and primary research study, consisted of a series of semi-structured in-depth interviews involving a total of 31 participants comprised of:

- 22 industrial design consultants; of which, 18 were managing directors, directors or sector managers; and 4 were senior or lower-tier designers
- 4 leading academics in the research area
- and 5 design-related strategic consultants.

The activities from both studies were recorded and transcribed in preparation for analysis in NVivo software. The data analysis process involved four stages: a line by line initial coding of the data in place; course coding into provisional groupings; fine coding using descriptive and thematic coding; and clustering to form constructs and themes (Boyatzis, 1998; Ezzy, 2002; Saldana, 2009). The findings provided a thorough representation of the circumstances surrounding designers undertaking responsible design, and were formatted as in-depth portrayals of: the product creation context; the system of determining factors; and the antecedents to an individual’s responsible design behaviour (Stevenson, 2013). This paper draws on the research outcomes to discuss the prospect of industrial design consultants undertaking responsible design more widely. It explores the realities of commercial product design and the challenges they raise, with the aim of informing efforts towards responsible design action and its management.

**Responsible Design**

This discussion centres on the notion of ‘responsible design’, which is used to signify design that aims to incorporate broader societal issues; such as our ageing population, environmental crisis, diminishing quality of life and social inequalities. The term encompasses the key design movements directed towards those topics; including sustainable design, inclusive design and design for social responsibility, and is intended as an umbrella term for succinctness. It was also adopted to avoid the separation of the different goals; as there is no reason, for example, why sustainable design would not also aim to be inclusive. ‘Responsible design’ is used in this paper as a single descriptor to represent the potential for design to have a greater impact across the goals, and is intended to represent: *design which effects a positive change on the greater needs of society.*
Designing For or Designing With?

Figure 1  Explanation of responsible design

The Demands of Commercial Product Design

Through the course of the research project, it was evident that a design consultant’s potential to effect positive change centres on the products they design. Although designers can inspire or educate with the concepts or processes they generate, a positive impact ultimately rests on them contributing to more responsible products and services being produced, bought, and used; and as such, their efforts and success are firstly subject to the demands of commercial product development. The following section examines this to set the scene for the discussion that follows, and also to outline the key requirements that responsible design will need to overcome if it is to have effect.

Design Selection

The basic and foremost requirement is for the consultant’s (responsible) design to be selected by the client. It was obvious from the research that to achieve this, a proposal must appeal to the client, and their ideas of what is appropriate for the market. It must also be manufacturable and saleable within suitable costings; and moreover, it needs to be the best option in contention according to the priorities of the project. Such priorities include numerous factors as diverse as whether the product is on brand, to whether it has a sufficiently strong feature set in comparison to competitor products. However, the research participants explained that these details are not always apparent upfront, and that in many cases clients only find the means to communicate their preferences once they have something to react to. On the
other hand, participants also described how some clients will know exactly what they want, but in so doing are unresponsive to alternatives.

Ultimately, design selection comes from the client side, and as such, their interests and objectives constitute the crux of the process. Each aspect of a design proposal will need to appeal to the selectors and be recognisable to them as something of value, if it is to be chosen. The success of responsible design, therefore, is primarily dependent on gaining the client’s approval, and will require design consultants to present persuasive proposals that are not only within the expectations of the brief, but which are competitive with other directions. It was also evident from the research, however, that at the core of consultants’ actions is their wish to satisfy clients in order to maintain and grow their own business, and the work they present is unlikely to put that objective at too great a risk. In cases where the client has not assigned explicit priority to responsible design goals, therefore, consultant’s may not wish to push for it.

**Production**

Following its selection, a (responsible) design proposal needs to then survive through development with its intention intact. The research revealed that this is no mean feat given the array of potential influencers along the way; many of whom often have greater impact than the design consultant. Respondents stressed how procurement teams, for example, whose decisions are often dominated by cost concerns, can have a significant impact on the final version of the product produced. Similarly, manufacturers, or sales teams along with the background histories of previous projects, can have dramatic influence on a proposal’s development. One design director explained:

> You talk about sustainability; materials from polymer to metal are getting changed ... We could do a lovely eco indicator and just tell them where to spend their time on materials, we could do all these ... but the Chinese manufacturer will go 'well, I've got this grade material' or 'I'll just use this reground material over here' ... It's still ‘wild west’-like in these areas, however hard you try.

Ultimately, the (responsible design) proposal needs to reach production if it is to have impact, and this is dependent on company decision-makers and financiers approving the investment required for tooling and manufacturing. Research participants emphasised that this can be substantially larger than the design and development budget, particularly where third party
manufacturers are involved. As such, the decision to go to production is a key go-gate in the process, typically driven by evaluations of costs, market opportunities, viability and risk; with the main assessment tending to rely on quantifiable measures. In simple terms, the (responsible) product will need to be recognised as sufficiently beneficial to business goals and potential profitability if it is to be taken forward. Both direct and indirect benefits are relevant, and in this regard, CSR (corporate social responsibility), brand image and customer opinion may gain importance for supporting responsible design proposals. However, these are relatively minor enablers. If deeper responsible design impacts are to be achieved, larger changes to product offers will need to gain approval, which will demand ample backing to gratify business evaluations.

**Availability to the Market**

A further basic requirement is for the (responsible) design to actually reach the market. Where a client company is reliant on third party retailers and distributors, those parties will have to consider the product something they can sell and gain profit from if it is to be held in stock and gain ‘shelf space’. The respondents explained that this depends on the product offer and price mark-up, but more significantly, on the retailer’s perception of their customers’ requirements and whether they feel the product will appeal to them. Participants stressed that it is not unheard of for retailers to have direct involvement in the design process, and they may even be the decider in whether a product is actually produced. One design director explained:

... so the retailer might say ‘sorry we’re not going to accept your design, you may well think it’s wonderful, but I don’t think it’ll sell’. ... so you’ve not succeeded in designing a [successful] product if a retailer isn’t accepting it ... they’ve a lot of power.

This serves to emphasise that achieving more widespread responsible design hinges on collective action and on an alignment of several perceptions from parties across the process; including customers, users, retailers, manufacturers, consultants, design firms, and the various members of the client company. Without a shared interest and willingness to embrace responsible design goals across all these groups, attempts towards it are unlikely to progress.
**Purchase, Use and Engagement**

Finally, once a (responsible) design reaches the market, it should be acquired and used, if it is to have effect. Although markets can be influenced; and possibly lead to some degree; each sale rests on a purchasing decision from a customer. This decision can incorporate aspects such as price, performance, features, ease of use, semantics and aesthetics; as well as the influence of trends, advertising, competitor products, and the psychology of the individual. Participants stressed that while designers can play a significant part in the lure of a product, many of the elements affecting purchase decisions can lie outside their influence (particularly if they have only a partial involvement in the product’s development).

For a product to have any real impact on responsible design goals it should ideally be used for an ongoing period. Reasons for owning products, however, have multiple facets; including personal rewards; outward expressions; or even notions of identity (Barthes, 1972; Whiteley, 1993; Molotch, 2003; Sudjic, 2009). Moreover, many of these drives and desires are susceptible to regular change; not least of all due to the shifting influences generated by commercial industry. Business prospects often depend on this turnover of products, and clients typically commission consultants for the very purpose of helping to generate alternative options and new desires. If people’s satisfaction persisted, or was based on sufficiency, and if products could last, and industry could blossom regardless; expectations of ongoing product engagement could be directed more towards the designer; but unfortunately, this is not the situation. Instead, responsible design will have to find a way to fit within the commercial context, and to satisfy the requirements it poses.

Figure 2 summarises graphically the requirements to achieve responsible design commercially, as discussed above.
Figure 2  The requirements to achieve responsible design commercially
Achieving Responsible Design Commercially

The product development milestones described above outline the vital steps for a product to gain success, and they indicate what is required if consultants are to have effect, regardless of whether the goal is responsible design, sustainability, or promoting a preferred styling direction, for example. The distinct difference, however, is that certain goals; such as those related to aesthetics or usability; often align more easily with business objectives and commercial success. Those goals relate well to attracting the purchaser; they have a perceived value more readily recognised by the various parties involved; and they are also more central to why design consultants are typically commissioned. For responsible design goals to be regarded in a similar manner, products would have to be considered attractive and commercially viable because they are responsible. The research indicated this is not the case, and that it would require significant change in the mind-set and perceptions of not just consumers, but of each of the parties involved in the product’s creation (clients, manufacturers, retailers and designers).

Participants stressed that given the motives currently driving product production and purchase, this is likely to be a slow change, and it is improbable that responsible design will become a dominant driver. Instead, it was clearly apparent that if responsible design is to achieve greater success (within a profit-oriented system) it will need to do so in addition to being commercially attractive and meeting the milestones above. As such, achieving the goals should be at little or no additional overall penalty, and preferably with added benefits for the client’s business. Extra time or cost incurred would need to be justified by demonstrating the opportunity for return, and the overall design proposal will need to be sufficiently appealing from a business perspective.

Another point raised in the findings is that if responsible design is to occur, it either requires clients to accept it; or alternatively, for the designer to operate stealthily and possibly circumnavigate any need for persuasion. The latter approach, however, seems limited in its reach and unsuitable to longer-term action as greater impact on society’s needs requires more weighty changes in products, which is unlikely to be achieved unbeknown to the client. Any significant movement towards more widespread responsible design, therefore, will require clients to share in responsible design concerns; or at least be receptive and then persuaded of their importance. The consultants interviewed explained that all too often, however, a client’s approach to product creation is heavily dominated by comparison with competitors, or considerations of cost, price and features. As such, justification for responsible
Designing For or Designing With?

Design approaches will also need to overcome existing mind-sets, and the resistances to change and risk which the respondents stressed occur. Central to this persuasiveness is the need for sufficient back-up, but participant consultants expressed that there is a lack of supporting evidence or suitable metrics to help underpin proposals and to help them persuade clients. One director provided the following explanation which summarises well the overall difficulties:

... there are probably far too many designers who just don't get it at all, in terms of their responsibility for the downstream impact of their actions. But for those of us who do get the responsibility ... there is a duty there to push and nudge and try and get better behaviours. But there's a very crystal clear line which is that when we've tried pushing - it can be as simple as trying to not paint phones - we'll just hit a brick wall because the knowledge about the impact is too fuzzy; you're not quite sure what the recovery value chain looks like and so you're asking your client to potentially compromise the immediate saleability of their product in order to take a very long, odd, uncertain bet that somebody in the future might actually benefit from that. Now that kind of choice will never be won. That's just a dumb choice.

It is clear from this that if responsible design is to progress in the commercial sector it needs to relate to the workings and objectives of that sphere. It is understandable, therefore, that there is often a focus in the literature on the commercial benefits afforded by the different approaches; such as how inclusive design broadens available markets, or ecodesign provides cost benefits (Tischner & Charter, 2001; Dong et al., 2004; Bhamra & Lofthouse, 2007). However, it was apparent from the research findings that more appropriate and reliable information is still required in order to support any significant change.

**Motivation to Undertake Responsible Design**

The individual designer’s interests and motivations constitute the main determinant in whether they will pursue responsible design goals as part of their design activities. Ultimately, if responsible design is to be enacted to a greater extent, it needs to be an intrinsic part of designers’ thinking and intuition, as well as their methods for understanding problems, posing solutions, and making judgements and evaluations. It was evident from the research participants, however, that they hold clearly different views on what
constitutes a contribution to society’s needs. Some appeared to only regard
the segment of society they themselves belong to; while for others, reducing
annoyances, or adding beauty and convenience to peoples’ lives was felt
sufficient. Some, however, saw their role simply as serving their clients’
needs: ‘I see my job as helping my clients achieve what their objectives are -
trying to do it in the best way from a design point of view’.

Such outlooks may be due to how challenging it is to pursue responsible
design goals; but they also suggest a possible shortfall of awareness,
knowledge, interest or connection to the topics. It was clear from the research
that overall design consultants act predominately in response to the
requirements of their clients and those of the design firm they work for.
Despite their drive to push boundaries, a consultant’s outlook is affected
significantly by what they are led to prioritise, and what is expected of them in
their role. One designer explained:

As a working consultant, I am ultimately reliant on the philosophy of
the company; the design consultancy, that I work for. ... [As a
consultant] your ambitions are always mitigated by your
responsibilities to the client's perspective.

The research demonstrated that responsible design goals typically occupy
a low priority in the commercial setting (if at all), and it was apparent this has
a large influence on designers’ motivations to undertake them. Even when
consultants are willing to challenge briefs or question assumptions, they still
tend to do so for the good of the product and ultimately, for the good of the
client. But responsible design hinges on other interests, additional to those of
the client, also being represented.

Levitt and Dubner (2005) highlight that humans respond to incentives, and
it is pertinent to ask why design consultants would take on responsible design,
or what their incentives are for addressing it? Where clients make requests
for it, there is an easy response; however, the research indicated that this is
rare, and it is curious why designers would try to take it on in those other
cases, particularly where it is not at all valued by the client. Moreover, there
are ample avenues facilitating consultants to turn a blind eye or abdicate
responsibility; such as role morality, or the immunity afforded them by acting
as a consultant (Gibson, 2003; Owens, 2006; Stevenson, 2013). The research
findings indicate that most uptake of responsible design (outside of legislative
requirements) seems predominately driven by designers wishing to gratify
their own personal values and altruistic or prosocial tendencies. They pursue
it because they have sufficiently strong feelings that it is the right thing to do.
In their theories on altruistic behaviour, Schwartz (1977) and Geller (1995) propose that prosocial actions originate from an individual actively caring; and that they are driven by awareness of the consequences of their actions, and their ascription of personal responsibility for those consequences. The research findings demonstrated that this motivation varies greatly with each designer. It was also apparent that their motivations to enact responsible design are not only dependent on character, background and experience, but also the social norms and interactions that inform their ideas and values (Stevenson, 2013). These external influences are relevant both because designers function as part of a larger product creation system; and also because they plug into the social context and zeitgeist to inform their designing.

A central part of this is the value and priority responsible design goals receive in comparison to the other aspects of product design; such as aesthetics, novelty, innovation or use of technology. This also relates to what is considered ‘good design’, and links to the various evaluators of design; from awards, to advertisements, to the media; each of which contribute to informing designers (and the other parties involved). Unsurprisingly most people; especially designers; are seduced by the more desirable aspects of design, such as aesthetics or new technologies, and accordingly these attract more attention and appreciation. Furthermore, in many sectors; for example consumer electronics; those more desirable facets tend to be the primary reason for a product existing at all. Either way, it is unlikely that responsible design will trump aesthetics, brand or technology in what people favour. Its success, therefore, relies on designers being sufficiently motivated, not only to overcome restrictions and challenges, but also to overcome their attraction to the other more ‘desirable’ facets of design enough to incorporate it as an additional objective.

The key issue is the balancing or resolve of the multiple requirements of each project, and to what extent the needs of a broader society are included. How responsible design goals are incorporated into the designer’s thought process is central. For example, if the goals are at a foundational level in how the designer approaches a design task, there is the potential for a more fundamental impact than if they are an ancillary consideration later in the process. This highlights the importance of nurturing responsible thinking as early as possible in an individual’s development (even before they are directed towards design).

Reflecting on the research, however, it was discernible that there is a shortfall of external influences effectively promoting responsible design in the
commercial setting. Many of the mechanisms that do exist; such as conferences and publications; rely on voluntary uptake (requiring a pre-existing interest or concern) or tend to occur more in the academic sphere, which is typically apart from professional practice. In the documentary film ‘Objectified’ (Hustwit, 2009); Valerie Casey, while discussing the formation of The Designers Accord, relates an anecdote of discovering a toothbrush they had designed washed up on a holiday beach in Fiji. Without comparable moments of realisation and cause to redress, it is questionable whether many designers will contemplate or revise their standpoint, particularly because they do not often have the time or capacity to monitor and review their own broader situation. This is worsened by the fact that the majority of drivers in their daily working lives direct them towards business targets, and there is little to direct them towards prosocial concerns.

One possible disruption is the waves of younger designers graduating from design courses with an increasing regard for the topics. Educators have a crucial influence in the early stages of a designer’s development; however, their impact can dwindle as a career progresses and as the designer’s views alter with the complexities of the commercial world. While it is fair to assume that the growing attention responsible design topics receive in education will aid progress, it is also important to identify that without ongoing reinforcement, those ideals may not survive in a commercial setting which responds differently than the university institution. The research identified that where a personal interest does exist, it is important to sustain it. Motivated designers will need to gain a level of belief that progress is possible, or that the goals are achievable in some measure. One consultant designer commented: ‘I want to make sure I’m toiling away in an area that’s going to make a difference’. This relies on the availability and communication of evidence which demonstrates progress and positive outcomes. Moreover, the topics need to sustain their importance. There were warning signs in the research that if designers perceive responsible design goals as transient topics, they will be cynical or slow to give them real consideration.

On the other hand, the topics have only been identified relatively recently, and it was also apparent from the findings that a greater understanding and knowledge needs to be established if responsible design goals are to receive consultants’ further attention and application. Participants were quick to highlight the need for clear, consistent, and useful guidance which is appropriate to how they work; and more importantly, which they can have confidence in. Professional, or regulatory bodies are one potential anecdote. Were they in force, they could provide guidance and precedents for what is
expected from designers while also offering a conduit for imparting the required knowledge and information, once it is generated. In the UK, however; despite recent progress in the growth of BIDA; there is as yet no significant influence from this direction. As such, the main onus remains on the individual designer and their personal drive or altruistic motivations.

**Potential Leverage Points**

Reflecting on the outcomes of the research, it is possible to identify a set of opportunities or leverage points to potentially improve the uptake of responsible design. Many of these require further investigation to be effective, and as such, they also represent potential areas for future research.

A first consideration would be to look at increasing designers’ motivation and intention to address larger societal issues. Improving their awareness of the topics is an obvious point of departure; however it is widely accepted that an increase in knowledge alone does not directly lead to pro-social behaviour (Grob, 1995; Kollmuss & Agyeman, 2002; DEFRA, 2008). Instead, it is the designer’s overall sense of responsibility which is crucial. Behavioural theories advise this will depend on personality factors and an individual’s altruistic tendencies (Schwartz, 1977; Hines et al., 1987; Geller, 1995), and further exploration would be beneficial to understand how these may be influenced. The designer’s motivation to act is also affected by their sense of enablement; their past experiences; and the social norms and incentives that inform them (Triandis, 1976; Bagozzi & Warshaw, 1990; Jackson, 2005). One key opportunity therefore, is the general recognition the goals receive, and more importantly the value assigned to them in comparison to other design objectives. In addition, stronger demonstration of success through case studies, clearer knowledge and suitable metrics would also support a greater sense of being able to have effect; while also aiding designers to recognise when opportunities do exist. Disseminating this understanding to practicing designers in a mode appropriate to their needs is also a challenge requiring more attention.

Another main avenue of approach is to help increase the demand for responsible design, both from the consumer, and the client. This begins with identifying and marking existing interest or support more clearly. It would also include finding better ways to communicate in business terms what is to be gained from responsible design. Success in this area likely relies on providing suitable metrics or measures to demonstrate effects. More importantly, responsible design could be better enabled by encouraging designers not just to
enact what is required of them by their clients, but to assert greater leadership, particularly towards societal issues. The topic of role assertion is a complex area, which has had little exploration in relation to this subject. At a basic level, however, improving the designer’s potential to influence their clients would again benefit from broader availability of case studies and other forms of evidence to back-up arguments. Progress towards industrial design’s professional status would also improve the designer’s credibility, and by extension their possibility to have greater influence.

Conclusions

Achieving responsible design impact ultimately centres on product outcomes, and to effect a positive change on society’s greater needs, design consultants must create persuasive and appealing solutions which fall within the expectations of the client and market, and which meet the demands of the commercial context. The success of commercial responsible design relies on more sophisticated understanding, metrics and examples, which have greater relevance to business goals, and the key participant parties. If it is to gain broader uptake, designers require consistent knowledge and guidance, which is appropriate, and which they can have confidence in. In addition, responsible design’s success is critically dependent on designers’ awareness and motivation to take on the topics; particularly their assertion of responsibility towards the larger consequences of their design work; along with their willingness to recognise and avail of the opportunities that do exist.

References


Designing For or Designing With?


Kollmuss, A. & Agyeman, J. (2002). Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-Environmental


