Appropriate Theory.

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The relationships that may exist between two entities are examined, and interpreted when the entities are theory and design. Relationships that sustain theory and design, together, are isolated. A test for the appropriateness of a theory to its subject is introduced. The importance of developing this test is indicated. Ways of building theory that avoid the need for an appropriateness test are also explored. The benefits and weaknesses of these various understandings are considered.

While some of the work presented here is already established, the means of establishing it and the degree of abstraction are novel.

Appropriate Theory

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Progress means simplifying, not complicating.

(quote painted on a wall at the Design Museum, London, attributed to Bruno Munari, viewed April 24, 2004.)

Abstract

The relationships that may exist between two entities are examined, and interpreted when the entities are theory and design. Relationships that sustain theory and design, together, are isolated. A test for the appropriateness of a theory to its subject is introduced. The importance of developing this test is indicated. Ways of building theory that avoid the need for an appropriateness test are also explored. The benefits and weaknesses of these various understandings are considered.

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Introduction

It is currently common to import theory from outside a field in order to throw light on that field. This is certainly so in the case of design.

Simply and abstractly, theory and design may be thought of as two entities assuming various relationships. Yet, when two entities are connected, and one is considered as a theory of the other, not every possible relationship is viable or acceptable: in some cases because the connection is not like that expected between a theory and a field; in others because of the principle of types.

Focusing on the generality (and simplicity) of relationships—rather than the specifics of a particular theory and its view of design—the question arises as to which relationships might be helpful and productive. Given the current propensity to theorise (about) design, this approach may be specially important: after all, honest

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evaluation must include the possibility that the value is zero.

Fitting two entities together

Abstractly and simply, there are few ways we can compose two entities. These are described in classical symbolic logic and in its alternate, set theory, through Venn diagrams (see section after next).

Possible relationships are these:

1)   no connection (A is not B).
2)   conditional:
2.i)   if A then B
2.ii)   if B then A (complement of 2.i).
3)   intersection, under which heading I include the three logical operators:
3.i)   "and" (the space A and B have in common);
3.ii)   "or" (the space of A and of B, together);
3.iii)   "exclusive or" (the space of A and B, but not the space shared)
4)   finally, identity: A and B share an identical space and there is nothing else.

Considering these relationships we find:

In 1), nothing is shared. This is like grouping fish with bicycles. They share nothing and what is in one has no bearing on what is in the other: there is no relationship.

In 2.i), what is in A is in B, but not everything that is in B is in A. Thus, there are aspects of B that are independent of whatever is in A.

Complementarily, (2.ii) is what is in B is in A, but not everything that is in A is in B.

In the case of identity (4)), everything that is in A will be in B, and everything that is in B will be in A.

The cases of intersection in 3) are trickier.

The "and" relationship (3.i) tells us that some, but not all, of what is in A overlaps with some, but not all, of what is in B. What is in the area of overlap is in both A and B, but what is elsewhere in A and B remains independent, as in 1).

In the "or" (3.ii) we are concerned with everything that is in A and B, whether overlapping or not.

In the case of the "exclusive or" (3.iii), the area in which A and B overlap is excluded, so what happens in A is separate from what happens in B.

(Note: extended analysis using set theory becomes recursive once theory becomes

practice. This is beyond the scope and intention of this paper.)

What is theory?

For our purposes, the following phrases, taken from on- and off-line dictionaries, describe Theory:

A plausible or scientifically acceptable general principle or body of principles offered to explain phenomena.

Merriam-Webster's Online Dictionary.

The branch of a science or art consisting of its explanatory statements, accepted principles, and methods of analysis, as opposed to practice.
The American Heritage Dictionary of the English Language, Fourth Edition, 2000, Houghton Mifflin.

An exposition of the general or abstract principles. The philosophical explanation of phenomena.
Webster's Revised Unabridged Dictionary, 1996/1998, MICRA Inc.

all cited at: http://dictionary.reference.com/search?q=THEORY, visited 23 April 2004.

That department of an art or technical subject which consists in the knowledge or statement of the facts on which it depends, or of its principles or methods, as distinct from the practice of it.
The Shorter Oxford English Dictionary, 1993 Clarendon Press Oxford.

These definitions show us that:
the purpose of theory is the explanation of phenomena;
theory is made of explanatory statements (generally abstract principles), knowledge and methods; and
theory is a department of both sciences and arts.

The relationships between two entities, when one is theory and the other design, and some advantages and disadvantages of these relationships.

We now consider how this analysis of the relationships between entities can be understood when the entities are taken to be Theory and Design.

We consider only homomorphic mappings, i.e., the simplest. If we considered isomorphic mappings as well, the outcome would in some cases be different and the discussion extended.

In the Venn diagrams, A indicates Theory and B Design. The logical outcome of each relation consists of the hatched areas.

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The notion of appropriateness is introduced in this section, in order to propose a test and validation of the use of a theory in a particular relationship to another field. This is developed later.
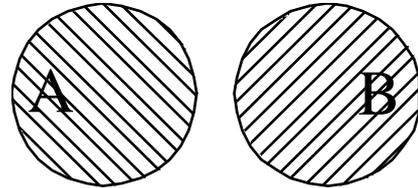

1)   A is not B

There is no relationship between A and B: theory and design are separate and unconnected: A is not (the theory) of B (design), therefore we should not promote A as a theory of B. While obvious, it is important to guard against promoting disconnected theory!
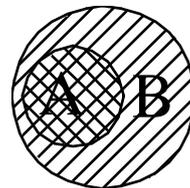

2.i)   if A then B

A accounts for some of B, but offers no new insight into what B might be because A is totally contained within B. As a theory, A thus accounts for some of design, but we should be wary if we try to make if account for the rest—for A has no predictive power that might suggest new insights or testable hypotheses.
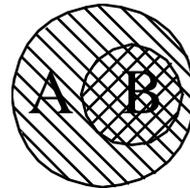

2.ii)   if B then A

A accounts for all of B, and more. This is an interesting case full of promise and danger. What is offered by theory is a larger field than design currently is. Theory offers design new insights and possibilities (as I have argued the potential benefit of variety mismatch—Glanville 19994, 1998). Testable hypotheses may be generated. The danger is that these may not be appropriate, and may therefore lead to polemical abuse (as described in the next section). We need to develop means of testing the appropriateness—of insights, possibilities and, of course, hypotheses.
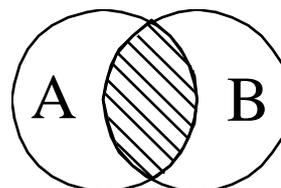

3.i)   A and B

This may be the "normal" case: part of A and of B overlap, are shared in common. What is significant is that the rest of A and B are not considered. In the "and" case, neither theory nor design is considered in toto. Shearing off of parts of each means the theory is partial and possibly ill-focussed on design. The selection of which aspects are shared under the "and" relationship may be arbitrary: appropriateness is crucial.
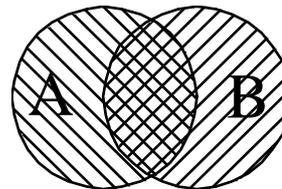
3.ii)   A or B

A more generous way of looking at theory and design than "and," "or" implies the significance of the whole of both A and B: what holds in any part holds for the whole. Those parts of A which do not overlap B bring possibilities (see 2.ii) yet are potentially dangerous, those of B not overlapping A are unexplained. Again, appropriateness is crucial.
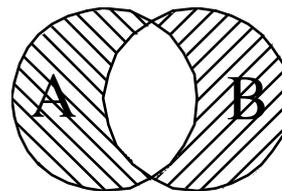
3.iii)   A or B ("exclusive or") excludes shared area

This is, effectively, the same as 1). There is no relation between the parts of A and B which do not overlap. In effect, the area where theory and design might meet is excluded from consideration. A cynic might argue this describes the situation in much design theorising. There is, of course, no question of appropriateness.
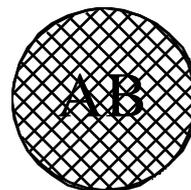
4)   A is identical to B

A and B cover the same territory: theory is design is theory. Given that theory is normally concerned with a reduction, this is no picture of a viable relationship between theory and design. Nevertheless, it, together with 2.ii) does at least mean that theory comes from design and thus the question of appropriateness is circumnavigated.

This examination shows what we may expect from the basic relationships, particularly those relationships that support theory and how they support it. That is its value.

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It is a check list for use when theory is imported to (in our case) design.

The danger of the polemical

In the above examples, theory is seen as a distinct entity from the subject it theorises (design). The two are brought together in a relationship. This is a specific and particular choice, reflecting how theory is frequently developed in one area and applied to another—i.e., theory derives from a field distinct from the field to which it is applied. As shown, this may have advantages and disadvantages. But when these (dis)advantages are not explored and tested we no longer have a proper use of theory: we have polemic.

Why does it matter if theory is polemical—that it is not subject to an assessment of appropriateness? An example indicates the danger.

In a recent doctoral thesis, Graham Barnes (2002) discussed psychotherapy theory. He wrote of the authority given to Berne's Theory of Transactional Analysis in certain psychotherapeutic practices. There were two overarching observations.

Firstly, while we have thought of (psycho)pathologies as observed and theoretical explanations deriving from these observations, pathologies are actually formed by their theories. The diseases we observe are those our theories predict and describe, not vice versa.

Secondly, pathologies and therapies arising from (Berne's) theory, may be very dangerous. Berne insisted (for reasons based on his theory and never tested or evaluated) that alcoholics recovering from active alcoholism using the teachings of Alcoholics Anonymous should cease this practice (which he understood as a transference of the alcoholic game from drinking to AA), instead practising (learning the game of) controlled drinking.

Consequently, many alcoholics in recovery returned to drinking, leading to death or insanity, while many others were kept away from a reliable path to recovery on Berne's untested says-so—his so-called theory presented as and through polemic. Barnes also demonstrated the immense damage done to schizophrenics and homosexuals (in different ways) by the blind, unquestioning application of Berne's "theories," actually inappropriate and untested dogmas; or pig-headed assertions of insistent and intentional ignorance.

Barnes' examination (and other similar examinations) should suffice to make us very careful indeed about how we use theory, and how we check its appropriateness.

Using polemic as theory, Berne perverted psychotherapy practice so that it became

completely inappropriate. This is the danger when theory becomes polemical: it restricts and perverts rather than explaining and enriching. Some consider this occurs with theories imported to design.

In my judgement, Berne's blind and polemical insistence on his theory turned him from an interesting thinker into a mass-murderer.

Appropriate theory

The analysis showing how two entities may be related indicated viable relationships between these entities when they represent theory and design. However, the viability of many of these relationships depends on the notion of appropriateness.

In many cases, we know how to test the appropriateness of a theory's application to a field. This (accepting Popper's (1963) critique) is the major activity of science. It is risky if we do not have secure means of testing. or are uncertain that tests will be carried out. This is so all too often in design—viz the anecdote of a famous architect deciding to evaluate a social housing estate he had designed by living for a month in the luxury penthouse flat.)

The careful development of a methodology for testing is one way forward, and an important challenge for design. This sets a task: to develop a method that promotes and guarantees appropriateness. Some will claim this exists, but usually for and/or within a favoured theory. Such appropriateness is generally appropriate to the theory, rather than design: and this paper questions the value of imported theory. If this argument about appropriateness is as important as I believe, it is not resolved by appropriateness being imported along-side a theory, satisfying an appropriateness criterion within that (imported) theory. The whole point is to test the appropriateness of theory through its appropriateness within design

Inappropriate Theory

Another approach renders the issue of appropriateness altogether inappropriate. Theory is developed from and within the field (i.e., design) itself, as Euclid developed his axioms of geometry—one of the earliest theories we know of— coming out of geometry theorised by examination and rationalisation of what was already known within geometry. Such development entails considering (in our case) design in designerly terms, in order to analyse and examine principles within, from which it may be characterised and derived. It is possible to use other fields to assist, specially meta-fields such as mathematics and cybernetics, but only where there is a formal similarity displayed. Theory from within is inevitably reflective.

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Some limits of appropriate theory

Restrictions resulting from an appropriateness criterion suggest the field may become confined to what is already understood, meaning it is constrained by its theory and may never develop beyond its current confines.

Often, reflective research and practice are dismissed by arguing this restrictiveness (the other main argument is based on a spurious requirement of objectivity). (Contrast the benefit of a theory extending beyond the field it theorises, provided it passes an appropriateness test!) The behaviour of theory, constraining rather than explaining, is recognised in science by Kuhn (1970) and Lakatos (1970), both of whom are concerned with protectionist tendencies even when it is clear theories are lacking.

In fields such as design, where emphasis on creativity and the novel is central, such constraints are especially limiting and undesirable.

However, it is possible to use reflective processes to open up and amplify (rather than confine) at least the activities of individuals within the field of design (see van Schaik 2003a and b, Glanville 2003). The problem is no more structural that the problem of appropriateness in those relationships that support theory and design.

Is design the theory?

In earlier work, I have explored:

1) the nature of research as a design activity, and

2) the similarity between cybernetics and design (Glanville 1999).

There is no room for an extended development of the arguments here, but the central themes are these:

a)   Research is always designed, from setting up an experiment to the integration of the knowledge produced and the generation of theory. All research, including the construction of theory, is subject to (formed by) design: it is therefore inappropriate to demand design fit the constraints of (one or other form) research: this is to generate an error of type—to require that the superset of a set perform as the subset of that set. A generalisation of this position is that design is an essential cognitive act, as per the the accounts of constructivist psychologists such as Piaget (1955) and Kelly (1955).

b)   Cybernetics is concerned with circularity—in particular, circular causality; and

with the inclusion of the observer within the description of cybernetic observations. The inclusion of the observer and circularity of processes give it a formal similarity to these actions of designers are crucial to the remarkable character of the field.

From these arguments it follows that, if we wish to consider any theory as usefully importable to other fields, it might be design-as-theory, rather than the import of other theories onto design.

Conclusion

The relationships that may exist between two entities have been examined, and interpreted when the entities are theory and design. Relationships that sustain theory and design, together, were isolated. A test for the appropriateness of a theory to any subject was introduced. The importance of developing this test was indicated. Ways of building theory that avoid the need for an appropriateness test were also explored. The benefits and weaknesses of these various understandings was considered.

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Acknowledgements

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