

Gadamer
Action & *Reason*

**A Two-Day Conference on the
Application of the
Hermeneutic Philosophy of
Hans-Georg Gadamer
within the
Human Sciences**

**30 Sep & 1 Oct
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Department of Architecture
Department of Architectural and Design
Science
Department of Fine Arts
Department of General Philosophy
University of Sydney
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**CONFERENCE
PROCEEDINGS**

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Technology appears to operate within the world as both a benign and a sinister force. This presents a dilemma of control—who has the control and of what. One of the bases of this difficulty has been thought to lie in the close identification between technical understanding and rationalism.

The writings of Hans-Georg Gadamer, particularly *Truth and Method* (published in German in 1960), have been claimed to have profound implications in breaking the hold between techné (technical understanding) and rationalism. The writings develop and make accessible to a wide audience many of the themes developed by Martin Heidegger in *Being and Time*. Gadamer's writings prefigure many philosophical ideas labelled "postmodernism," "post-structuralism," "post-rationalism" and "post-empiricism," the impetus for which has been maintained by contemporary writers such as Richard Rorty, Richard Bernstein, Charles Taylor, Hannah Arendt, Jacques Derrida, Jean-François Lyotard and Jürgen Habermas (to name but a few). These resonances have recently extended into computer science through the work of Terry Winograd and Fernando Flores.

The emphasis of the writings of Gadamer is on the ubiquity of hermeneutics in all under-

standing, the unity of understanding, interpretation and application, and the dissolution of the Cartesian distinction between subject and object, and mind and body. The direct application with which Gadamer and his proteges are concerned focuses around language, culture, aesthetics, the philosophy of science and the bases of social action. Because of the historically unusual climate of rationalism (tempered with romanticism) that pervades current discourse within academic, governmental, professional and other social institutions, Gadamer's philosophy, and its implications, provides a locus for questioning in every area of human action. This is particularly the case in those areas that are struggling with the warring concepts of rational methodology, objectivity, subjective judgement, self expression and creativity.

This conference brings some of the major implications of Gadamer's writings to light, and aims to heighten the awareness and involvement of disciplines other than philosophy in the issues. The conference will address the question of how these issues influence theory, practice and research priorities across disciplines.

Hermeneutics and the Application of Design Rules

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Scientific thinking distinguishes theoretical knowledge (*episteme*) and technical or practical knowledge (*techne*).¹ Theoretical knowledge is of general laws formulated in mathematical or logical language; and technical knowledge concerns the application of these general laws for the purpose of attaining some practical end. Theory in this context is seen as a compendium of the general laws which are explanatory of an observed phenomenon; and practice is the application of these pre-given laws, codified as a sequential method. General theoretical laws translate into rules of procedure. Applying these concepts to designing, theoretical design knowledge is the knowledge of the design process formulated in design rules, grammars and formulae; and design practice is the methodical and step-by-step application of these formulations in order to produce a design.

The conventional assumption is that theory precedes practice: first we know the general laws governing the behaviour of objects; and then we utilize these laws to manipulate and control them. It is basic to this assumption that laws have a universal validity and function in the same manner in every instance of their application. This accords with the orthodox epistemological tradition which, from Plato through Descartes to logical positivism, insists that only knowledge of unchanging laws or principles is true and valid knowledge. Knowledge cannot be of what changes, but only of

the unchanging laws which govern change. Knowledge of what changes would itself be subject to change and thus to constant modification or repudiation; it would be merely transitory, uncertain and relative; it would, as Plato says, be mere opinion or belief, with each person his or own judge of what is true.² True knowledge, by contrast, is constant in its application. Epistemic laws are immutable, whatever the particularities of the situation in which they are applied. Technical knowledge, therefore, is the application of general laws which are uniform and unchanging, regardless of when and where they come into force.

Scientific laws are thus deemed to have a general validity which is wholly independent of local conditions, just as the law of gravity holds in precisely the same way everywhere and at all times, however varied the circumstances of its occurrence. When the laws of science are applied to practical purposes, they do not vary from one occasion to the next. It follows that epistemic laws, being unaffected by particular or contingent vagaries, can be learned and taught in the abstract, and with no necessary reference to individual cases of application.³

These assumptions underpin researches in design science and Computer Aided Design (CAD),⁴ which aim to establish design laws which are indifferently applicable in every instance of design activity. Design methodology aims to specify the laws governing the design process and to

Orthodox epistemology distinguishes theoretical and practical knowledge. The former is a body of universally applicable laws formulated in mathematical or logical language, and the latter is the technical knowledge which applies these universal laws to particular cases for the attainment of some desired practical end. Inherent within this distinction is the presupposition that theoretical laws can be applied in the same way in every practical situation. Design science and CAD researches accordingly seek to formulate prescriptive rules which are generally applicable to the design process. This paper questions these concepts as they relate to designing. It argues that designing involves a practical knowledge unlike that defined by orthodox epistemology. This knowledge has to do with rules which are not universal in their application, but change according to the particular context in which they are applied. The argument is developed by reference to Gadamer's interpretation of juridical understanding; his review of Aristotle's concepts of ethical knowledge (*phronesis*); his assertion that interpretations, understanding and application are coincident; and to his concepts of game-playing. These considerations have important implications for design education and research in design science and CAD.

codify these laws as a logical sequence of procedures which apply in every design situation,⁵ and CAD researchers adopt strategies to determine the grammatical rules governing shape manipulation and other aspects of designing with the aim of developing computer systems which can be applied generally in the performance of design tasks.⁶ Foundational to these research endeavours is the belief that design rules function in the same way in every particular design instance, regardless of the conditions operating wherever or whenever they are used.

If this view were to be strictly enforced in design education, it would follow that students would first learn design theory, consisting of sets of binding, exceptionless, unchanging and timeless principles, preferably expressed in mathematical or quasi-mathematical formulae, which they would then apply in exactly the same way in each design exercise. The steps in the process would be programmed in advance, so that there would remain nothing for the designer to do but mechanically follow the pre-ordained procedures laid down in the method.

In the following it will be argued that even if these notions of general laws and their application have been spectacularly successful in the natural sciences, they are flawed when applied to designing, and far from aiding the design process can be disruptive and disabling.

The argument is based on Hans-Georg Gadamer's critique of concepts of the application of laws.⁷ In the light of his findings, it will be asserted that design methods which claim universality of application misread the nature of practical design knowledge and misrepresent the manner in which design rules relate to design practice.

Juridical Understanding

Gadamer cites juridical understanding to demonstrate that prescribed laws do not necessarily remain unchanged in the varying circumstances of their application.⁸ According to the traditional epistemological view, legal statutes are to be thought of as a set of pre-given immutables which are applied in the same way in every particular legal case, in the same way in

which design algorithms, according to design scientists, can be applied in every design situation regardless of its particularities.

The good judge, however, does not simply take a pre-given law and "apply" it in the same way in all circumstances, but interprets it in the light of precedents and as it pertains to each unique case. The judge upholds the spirit of the law by acting in its light but applying it differently in various concrete situations. His understanding of the law involves its application and its modification in accordance with contingent circumstances.

The judge's interpretation of the law is neither objective nor subjective, since there is a reciprocal relationship between the law and the way the judge understands it in its application. Not only does the meaning of the law change in its application, but so also does the understanding of the judge. Judges apply their understanding to the law, but at the same time they apply the law to their own understanding, because they are concerned to understand the particular cases they are judging in the light of the law and not by way of their own understanding alone.⁹

To show that the law is only understood in its application Gadamer cites Aristotle's concept of equity (*epieikeia*), the correction or accommodation of the law. Aristotle says that no law has a straightforward and clearcut meaning but has a certain internal tension in that it can be applied in a number of ways; it contains a number of possibilities of action as it relates to specific cases. There is a tension between the sense of the legal text as it is written and its meaning arrived at in the particular moment of its interpretation within the context of particular legal situations, which are continually varied and new. This means that the text of the law must be understood in a new way each time it is applied.

Equity is not best served by sticking to the letter of the law, but by interpreting it in terms of its spirit. This involves a process of improving and completing the law, with the implication that the law is not perfect in itself, but only finds its completion and perfection in its application. A law is always general and cannot include within its compass all the pos-

sible complexities to be found in individual cases. In this sense a law is always insufficient, and the field of our actions is imperfect when compared with the ideal order envisioned by law. Codified law does not in itself, therefore, fulfil the conditions of finding justice. Equity functions to perfect the codified law. Further, each concrete application of the law carries with it the implication that it is not unjust to tolerate a certain elasticity in its interpretation.¹⁰

Since the text of the law must be understood in a new way each time it is applied, the laws governing the enactment of equity can never be enacted.¹¹ The assessment of what is a correct judgment cannot be determined in advance or apart from the particular situation, because the situation itself partly determines what is the correct judgment. For this reason correct action or correct decision cannot be definitively codified.¹²

The Concept of Ethical Knowledge

These ideas are further developed in Gadamer's review of Aristotle's concept of "ethical knowledge" (*phronesis*), which highlights the notion that understanding and application are coincident and demonstrates that the application of pre-given rules involves a type of knowledge which is unlike epistemic knowledge.¹³

Aristotle puts forward his ideas on *phronesis* as a counter to Plato's assertion that virtue is a matter of knowledge, so that virtuous action is the application of rules of virtuous behaviour which are known by the virtuous man before he is called upon to act. The virtuous man, in Plato's view, has learned the rules of correct action and thus knows what to do in every situation. He simply applies the known rules. Virtuous action is thus analogous to the skilful action of the craftsman who fashions an artefact; it is the application of universally valid rules to a prescribed end. The particularities of the unique event play no part in the application of the given rules.

Aristotle protests that the application of general ethical principles to particular circumstances depends on the exercise of moral judgment, and judgment is not itself governed by general rules. It is, rather, a response

to the unique peculiarities of the situation. Judgment is not something that can be conveyed by way of some kind of formal doctrine; it cannot be embodied in prescriptive formulae; it cannot be learned in advance, but can only be learned by and in practice, in the very process of applying the general rules that have been previously learned. We learn correct judgment by a training in the performance of correct actions. We become just by doing just actions.¹⁴ "The decision lies with perception,"¹⁵ that is, in "perceiving" or understanding the particularities of a situation. We do not understand the *point* of moral rules, we do not understand what they are *for*, unless and until we interpret them by applying them in a particular situation.

Virtuous behaviour is thus an application of general rules in a manner unlike that described by Plato and orthodox epistemology. Knowledge of how to act virtuously, *phronesis*, differs from epistemic knowledge. It is not a knowledge of immutable rules, but a knowledge of rules which change in their application; and therefore it is not an unchanging knowledge, but one that is modified each time it is brought into action. Ethical knowledge is modified in each particular instance of its application because we have an understanding and tolerance of the motives of others and can therefore act for their sakes.¹⁶ It is a knowledge which involves choice; and it is never *mere* knowledge, but is knowledge revealing itself in action and in involvement, so that the idea of what is ethically right "cannot be fully determined independently of the situation that demands what is right from me."¹⁷ Ethical principles, or our ethical prejudices, cannot be uniformly applied in each and every situation and remain ethical. They retain their right to be termed ethical to the extent that they are modified to meet the requirements of the unique situation. That is, they cannot be divorced from practical application and are acquired through application.

Plato says that people become good by learning the rules governing virtuous action and can forget those rules. Aristotle, by contrast, claims that people cannot be taught how to be good; and if they are good, this is a knowledge that will never be forgot-

ten, since "we are always already in the situation of having to act... and hence must already possess and be able to apply moral knowledge."¹⁸ Although we know in advance the rules of conduct which tell us what is right and wrong, we do not have prior knowledge of how the rules are to be applied when we are called upon to act. This knowledge is "worked out" in the very event of acting. This means that the laws embodied in statutes are only valid as schemata.¹⁹

The Coincidence of Interpretation, Understanding and Application

The judge's knowledge of how to apply the law equitably and the virtuous person's knowledge of how to act virtuously are matters of judgment, which is to say matters of interpretation and understanding. Does this mean that the judge and the *phronimos* first interpret and understand the law or rules of conduct and then apply them in the light of that understanding or that the ability to apply the law equitably or to act virtuously is simply a matter of interpreting the statutes or rules of conduct and logically deducing from them the correct course of action? In other words, does their application not simply follow on from an understanding which derives from an interpretation by way of logical reasoning?

Gadamer precludes these readings by indicating that understanding, interpretation and application are not three distinct moments in the hermeneutical event, but are inseparably interrelated and coincident.²⁰ Application is integral with interpretive understanding. Every event of understanding involves interpretation, and interpretation always involves application. They comprise one unified process. "Application is neither a subsequent nor a merely occasional part of the phenomenon of understanding, but codetermines it as a whole from the beginning."²¹ Interpretation is realized in application. The interpreter only understands the text when s/he applies it.

Application is not a subsequent or appended operation, coming after understanding and interpretation; we do not first interpret, then understand, and finally apply what we have

understood. Interpretation is always the explicit form of understanding; and interpretation and understanding only occur in the action of application.²²

The meaning of applications that is involved in all forms of understanding is now clear. It is not the subsequent applying to a concrete case of a given universal that we understand first by itself, but it is the actual understanding of the universal itself that the given text constitutes for us. Understanding proves to be a kind of effect and knows itself as such.²³

Expanding this to everyday experience in the world, all authentic understanding and interpretation are realized in application.

When we read a text the very process of the play of reading and interpretation forces us to apply the meaning through the need to interpret it, which is an immediate application of the meaning of the text... The interpretation itself is the concrete, specific application of the text to our own lives.²⁴

Even our recognition of a sensible object as what it is and not something else depends on this coincidence of interpretation, understanding and application. The object exists in a tension between what it is in its own identity and the changing situation in which we interpret and understand it; and we interpret and understand it just as we do a law or a text or anything else that requires interpretation, by applying its meaning to the life-situation in which we find ourselves—and without such an application there can be no meaningful interpretation or understanding. So likewise, the interpretation and understanding of the "texts" of our lives—the rules of conduct and experience we bring to every situation—take place in the application of those rules and our experience in the succession of situations we live through.

As Gadamer says, application is not a calibration of some generality given in advance in order to unravel afterwards a particular situation. In interpretation the interpreter does not try to apply a general criterion to a par-

ticular case; but is interested in the fundamentally original significance of the case.²⁵

The Limitations of Design Rules

These notions are relevant to designing in that even a superficial examination of what designers do in the lived world of everyday design experience shows that they do not employ design rules in the same way in every design situation, but proceed in a manner which is directly analogous to that of the judge or the *phronimos* in that they continually exercise judgment in their design decisions and actions, interpreting the myriad factors which constitute the total design environment, and only coming to understand the rules they apply by applying them.²⁶

For the greater part designing does not proceed, as design science and CAD would have us believe, by the application of epistemic design rules, those which fit the criteria of science in remaining unchanged in every event of their application, but rather by practical design rules, which operate in the manner of legal statutes and rules of conduct which change when they are applied.²⁷ The former are fixed absolutes; the latter are fluid expedients.

This reveals a number of serious flaws in the account of design rules and their application given by design science and CAD. To begin, design science and CAD would claim that design rules are objective, in the sense of existing as objects which stand apart from the designer regarded as a subject, but design rules cannot be more than partially objective because in the exercise of design judgment the designer can never regard the design process, the factors which make up the design situation, nor the emerging design as mere objects, since s/he is involved in the design task and, as will be explained in the following, enters into an interactive relationship in which the subject-object barriers break down. Given this involvement even if design rules could cover all the factors operating in a situation, they could not give an adequate account of what the situation means to the designer who is caught up in it. Objective rules can never fully encompass the designer's role in a design situa-

tion. They can never wholly grasp the experiential moment.

Again, in order to codify methods for the application of design rules, it is necessary to be able to specify rules covering the application of rules, but this is not possible since the knowledge of how to apply rules is an integral part of the designer's being and is constitutive of his or her design decisions and actions. It cannot be detached from the designer and brought out as an object for inspection. It is also inextricably connected with the design situation in which the designer works. It is not known independently of or prior to the design situation but is an experiential knowledge, which only exists in an experiential situation and cannot be separated from its application. The knowledge of how to apply practical design rules cannot be formulated since it is not a static and unchanging knowledge, but is contingent on context, continually changing its configuration according to the peculiarities of each particular instance of its application. It cannot be an object since it is never self-identical in different circumstances.

Although it is possible to write down practical design rules in the manner of rules of conduct or legal statutes, like these they are not fully explicit until they are applied. As Aristotle says of legal codes, they remain unfulfilled and imperfect until the event of their application. The application of practical design rules is indissolubly connected with judgment, which is not something that can itself be embodied in prescriptive rules or formulae or codified in a generally applicable method, because what design action a designer should take in a particular design situation cannot be known in advance and outside the specifics of the situation.

Further, the utility of design rules in prescribed design methods and CAD programs requires that design actions and decisions can be logically deduced from the design rules. In practice, however, this is not the case. The designer does not usually arrive at design decisions by way of deduction from general rules, but rather by way of understanding the rules in the light of the particularities of the design situation. The designer does not logically deduce particular applications of a universal law, since it is

not possible to specify the rules for applying general rules to the particular case. Even if such rules for applying rules could be specified, these in their turn would need rules for their application, and so on to infinite regress.²⁸

Again, scientific expressions of design rules are required to be strictly defined and preferably expressed in mathematical language, that best suited for unequivocal and strictly specified statements. Such strictly defined rules, however, are only capable of organizing the elements of a design situation according to their major vectors, thus providing at best a sort of schematic template for action.²⁹ Their rigour entails sharp boundaries which necessarily exclude factors which form part of the total design situation. By this focussing of attention exclusively on certain aspects of the situation which have been selected out as relevant, mathematically or otherwise rigorously specified design rules can obscure the very conditions which make a design situation unique, which are precisely those most likely to trigger fresh and innovative design responses.

Designing cannot proceed by way of deductive logic from pre-given rules since it is not possible to specify in advance the major premise for a syllogism, namely, the sort of design action or decisions the designer should make. Design actions and decisions cannot be reasoned out before the event. All that can be given in advance are approximate generalizations deriving from examples of similar situations, but these examples can never cover all the possibilities, and can always be added to indefinitely. Given premises with such fuzzy boundaries design reasoning cannot be internally consistent and logical.

Design rules are useful and enabling, then, when they are general, not in the sense that they apply in the same way in every case, but in the sense that they can be applied in the case of every design situation. In either sense, general design rules cannot dictate "general" design decisions or actions, that is, decisions or actions which are the same in a number of different cases; nor can such decisions or actions be based on a general rule that derives from decisions or actions which have been observed to work

successfully in the past, that is, from general rules which have been "learned from experience" if, here again, "general rule" is taken to mean an unchanging law that has been derived by induction from the observation of particular instances or by trial and error. To have "a stock of experience" is not to have acquired a collection of pre-established "solutions to problems" or "answers," which are applied in the same way whenever similar circumstances are encountered.³⁰ Even if design decisions and actions can be shown to have been appropriate in one case, they cannot be indiscriminately imposed without modification on any other design situation because the assessment of what is an appropriate design decision cannot be determined in advance or apart from the particular design situation, and the situation itself partly determines what is the successful or correct design decision. For these reasons appropriate design decisions cannot be definitively pre-codified before the situation is encountered.³¹

Judgments concerning what design action is to be taken cannot be prescribed in inflexible rules. Such judgments are made on the basis of an interaction between general design rules and an understanding of the particular characteristics of the situation. This interaction cannot be codified in terms of deductive logic; the reasons for our design actions do not fall with the scope of deductive reason, since the rationality of our design actions cannot be demonstrated from an external standpoint, but can only be discerned from a position within the practical action of designing. Designing proceeds by way of perceptions of salient features within the design situation, and such perceptions cannot be reduced to deductive syllogisms. They form, rather, the premise of what Aristotle calls a "practical syllogism," operative in the type of reasoning involved in the exercise of judgment in a practical situation.

This is not to assert that the type of practical knowledge which functions in designing is irrational or unreasoning, but only that it does not accord with the definitions of rationality and reasoning laid down by the philosophical tradition which defines

rational knowledge exclusively in terms of what is objective and logically formulable. To say that we cannot specify how practical design rules are applied does not mean that designing is irrational, but that it involves other forms of reasoning than those which fall within the narrow definitions of "rationality" given by hard-core scientific positivism. It involves, rather, the forms of reasoning recognized in the ancient *philosophia practica*, which appealed to standards of rationality which have more to do with common sense and consensus than with the rules of rigorous logic.³²

Design methodologists conduct their researches supposing that it is possible to define both the ends of the design process and the means to accomplish those ends. This requires a prior determination of what the desired product is going to be. In the practical design situation, however, no clear prior definition of the intended end product can be given, since this is worked out during the process of designing.³³ This vagueness concerning means and ends is at the opposite pole to the supposed foundational certainties of scientific rationality, which believes it can lay down clearly defined aims and specify with precision the means of achieving those aims by establishing a system of rules so as to avoid the difficulties and uncertainties of feeling and understanding that are involved in the judgment of the particular situation.³⁴

Finally, design science would claim that design rules and the rules for their application can be encapsulated in algorithmic formulae which can be learned and forgotten. Whereas a general form of design rules can be learned, they cannot be learned in their essence because, as I have shown, they do not stand separate from the designer to be acquired at will. Their essence cannot be taught or forgotten because they are not fully objectifiable nor formulable. Again, the manner of their application cannot be taught since no teacher can prophesy the particular conditions which will apply in design situations encountered by the student.

The stepwise procedures laid down in rigid design methods will forever remain futile, because applicational procedures cannot be

taught in a final form, but are constantly revised in the moments of their practical application. Similarly, whereas codified methods can be forgotten, knowledge of how to apply rules can never be lost because they are imbued within the designer, and in that sense *are* the designer.

The understanding of how to apply rules cannot be explicitly taught for the added reason that what constitutes good or appropriate designing cannot be known in advance of the situation in which it happens, when the rules are constantly modified and revised in response to the specific peculiarities which the designer there encounters. The designer does not so much learn design laws as acquire them in the process of applying them.

Design Rules and the Rules of the Game

These considerations are further elucidated by Gadamer's treatment of the way in which the rules of a game relate to its playing.³⁵ It would not be possible to play a game if it had no rules; yet the rules only take actual shape when the game is played; and outside the particular specific instance of its playing neither the game nor its rules have concrete shape or existence. The rules provide a framework for the playing of the game and determine the range of appropriate actions the players can take, but they do not account for the way the game is played or the way it turns out each time it is played. Like the game itself, the rules only really exist in the actual playing of the game. The game is not the rules but its playing. In this sense the players "create" the rules and each concrete instance of the game. So likewise design rules govern the design process but only "come to life" when they are applied in a particular concrete design instance.

Further, in the playing of the game the rules never take the same shape or are realized in the same way on two occasions. Every game is a re-presentation, but never a mere repetition, of the rules; and since no two games ever play the rules in the same way, the concrete existence of the rules is not constant, but changes. The rules of the game change in their application, in exactly the same way that Aristotle says that legal enactments change

with the particular circumstances of their interpretation.³⁶

No single game ever exhausts the possibilities of the rules. The rules are never fully "played out"; they are never categorically captured in the playing; and the inexhaustible range of possibilities contained within the rules allows the game its richness, spontaneity and fascination.³⁷ So likewise design rules are never applied twice in the same way, because any number of contingent factors contribute to endless variations in the design process. The possibilities which lie innate within the design rules are never fully disclosed in any single experience of designing.³⁸

Heidegger says that, "The 'because' disappears in play. Play is without a 'why.' It plays because it plays."³⁹ The "spirit" of play is its to-and-fro movement, which happens of itself, aimlessly and effortlessly. The game has an autonomous existence, a "life of its own"; it has its own rhythm and a distinctive buoyancy; it has an existence independent of the rules, so that the game plays the rules as much as the rules determine the game. Similarly the design process goes its own way, in a back-and-forth rhythm which is not rule-dependent; it follows its own lead, revealing new possibilities at every turn.

Again, the game has its own dynamics and goals independent of the consciousness of the player. "Play has its own essence which is independent of the consciousness of those who play.... The players are not subjects of play; instead play merely reaches presentation through the players."⁴⁰ The players begin by playing, but are caught up in the game and lose themselves in what is happening.

Similarly, the act of designing draws in the designer; the process "takes over," and the designer loses him or herself in what is going on. The activity of designing absorbs the designer and dominates his or her consciousness, so that he is not aware of the design rules but only of designing. The designer's involvement in the design process breaks down the separation of the subject and the object demanded by the epistemic concepts of design rules. Caught up and carried along by the process of designing, the designer does not control it by the application of rule-based

techniques, nor by the conscious manipulation of formulae and methods.

There is no dichotomy of self and other or subject and object when the designer is absorbed in design. The designer is not a subject who manipulates and controls rules and uses methods, but is a medium in and through which the design process unfolds itself. When absorbed in the activity of designing, designers are not distanced from either the design process or the design situation. Designing is not an object; and the real subject in the design process is design itself. The designer as subject and the design process as object coalesce, and rules merge into the happening of design.⁴¹

Design understanding is not manifested when designers stand back from the design process so as to manipulate it as an object, but when they are intrinsically involved in the manner of a player who is being played, when they participate in the play of design ideas and are played by those ideas.⁴² Designers exercise design understanding when they become the servants rather than the masters of designing.

This is not to suggest that the designer takes a merely passive role in designing, waiting for design ideas to appear. Design involvement entails an interplay of the movement of the design rules and the movement of the designer who interprets those rules.⁴³ Although designers, like players in a game, follow the moves as they happen and are given over to the rules in that they accept and follow them and in that the rules play back to determine the design moves they make, they are also actively involved in the process of applying the rules at each moment of the process, and the process does not work unless they are actively involved. Designers give themselves over to designing, but this is not a merely passive letting go; at no time are designers more active than when they are no longer acting as subjects who stand remote from an objectively observed process, but as agents whose actions and consciousness merge into that process.⁴⁴

In summary, there are two ways of viewing the rules which govern the design process. On the one hand, as viewed by design science and CAD, they belong to a theoretical knowl-

edge which exists prior to any practical application. In this view designing consists in selecting pre-given rules from a store of epistemic knowledge and then applying them in a methodically prescribed manner. The rules remain unchanged in their application, so that they are applied in the same manner in every case. This presupposes that the rules are objective, logical and unchanging in both their formulation and application. For this they must stand remote and as objects to the designer who acts as a subject to manipulate and control them.

By contrast, practical design rules are not objective, nor are they applicable in the same way in each design case, but are analogous to the rules which govern the conduct of societies or games, being efficacious and appropriate to the degree that they are capable of giving rise to inexhaustible possibilities of interpretation and action.

The former view of design rules is detrimental to design education and disabling in the design studio and in design practice. The quickest way to stifle the "spirit" of a game or the design process is to apply too many over-explicit rules and systematic procedures or to apply them too strictly, which is what design methods attempt to do. Just as the rules of a game should not attempt to determine how each game will be played, so design rules should not aim to determine how the design process will work out in particular design contexts. And just as in a game there must be free play, so in designing there must be freedom of movement in the repetitive to-and-fro, going out and coming back. Design rules which have worked out the outcome of design activity in advance preempt the possibilities of action.

The to-and-fro movement of the designing game is erratic and confused; but if designers allow the process to lead them where it will, there is the possibility of "a flash of light through the confusion of the erratic."⁴⁵ "Once in a while, when the 'breaks of the game' permit, an exceptional breakthrough can take place which gives free access to hidden possibilities never yet explored."⁴⁶ The more stringent the rules governing the process and the more strictly the

design process is preordained by method, the less likelihood there is of an occurrence of these spontaneous "flashes" and "breakthroughs." Such expansions of design possibility depend on reversals of expectations and negations of fore-projections within the hermeneutical circle of designing. Such reversals and negations are precluded by methods which rule out the spontaneous emergence of the unexpected by stipulating procedural algorithms in advance.

This does not contradict the fact that the designer, like the judge or the player of a game, must know and abide by the rules governing procedure or play, but means that such rules enhance rather than diminish possibilities of action.

Design Rules and Design Education

These considerations have a direct bearing on design education. Firstly they distinguish alternative educational strategies. On the one hand there is the option of focussing on the rote learning of rigid epistemic design rules and methods of the type produced by design science and CAD, and on the other, that of aiming to instil design principles, taking the form of unspecific precepts, rules-of-thumb and heuristics,⁴⁷ with a clear understanding of their nature and role and recognizing that they do not embody universal and absolute truths, but are schematic guidelines for design action, which, if they are to be liberating rather than restricting, must have a certain imprecision and elasticity to allow for multiple interpretations and applications.

The evaluation of design rules involves an awareness that they are always insufficient in themselves. There is a tension between the explicit formulations of the rules and how they are understood, that is, between what the rules *say* and what they *mean*; between the letter and the spirit of the rule; between the form in which it is expressed and its innate potentialities, which are manifested in the moment of its interpretation and application. Rules, in this light, are not immutable paradigms with a universal validity of application, but everchanging sources of possibilities which are drawn out and disclosed in the context of the unique characteris-

tics of each design encounter.⁴⁸

Gadamer's concepts of application indicate that design education involves more than the teaching of design rules; it also comprises a fostering of skills of the interpretation, understanding and application of rules. As we have seen, these are matters of judgment which cannot be taught; but they can be developed by providing an appropriate design environment. Since design rules can only be understood in their application, an appropriate design environment is one which exposes students to a wide and varied range of design experiences. This justifies and supports the traditional wisdom which privileges the design studio by placing it at the core of design education.

The educational efficacy of the design studio depends not on the teaching of design grammars and methods, but in introducing students to the intricacies of design dialogue.⁴⁹ This introduction is multifaceted: it includes indicating precedents and "ways of doing," an exposure to design ideas and to the design culture and tradition,⁵⁰ and, preeminently, an introduction to the dialogical exchange of question and answer that constitutes the design process. Much of this the design teacher cannot teach, but can nevertheless encourage by drawing students into the dialogue concerning design precepts and precedents, the rules of the design discourse, and the ability to allow the design situation and the turns in the unfolding process of design to question the designer and his or her prejudices.

Much of this is characteristic of orthodox education in the design studio, and will appear obvious to many design teachers, but I nevertheless consider it necessary to spell it out in order, firstly, to intimate ways in which the strengths of design studio practices can be reinforced by a more conscious awareness of the way they relate to rules; and secondly, to counter the attitude, held by many academics in design schools, that present forms of design teaching in the design studio are "unscientific" and lack rigorous method or a rational base.⁵¹ Some design rationalists advocate the removal of design teaching from the design studio to the classroom;⁵² many regard the teach-

ing of strict method as the only valid design education; and many see CAD as the future of designing. Nevertheless, to show that design studio practices do not proceed in a strictly methodical or scientific manner nor according to objective criteria does not make them invalid, but merely indicates that they do not meet the criteria of a shallow positivism which is incapable of conceiving of any knowledge than the epistemic, any practice than the mechanically technical, nor any rules than the methodical. There is nothing irrational about the design studio, except by the narrow definitions of rationality laid down by a reductionist and censorial scientism.

The concept that design rules are only understood in their application has further implications for design education in that it dismantles the false dichotomy of theory and practice which influences the structuring of design curricula by dividing the theoretical "science" and the practical "art" of designing; by presupposing that design practice is the application of previously learned theoretical laws or principles; and that theoretical knowledge has a higher status than its practical applications. The division is invalid: theory is neither separate from nor prior to practice. Rules can be *known* (or "known of") in the abstract and prior to their application, but can only be *understood* in a context and in the instance of their coming into play.⁵³ Theory and practice are mutually dependent and are only meaningful in their reciprocal interaction.

This being so, there is no foundation for the notion that design education consists of teaching theoretical knowledge in the abstract followed by its application in the form of a prescribed method. Design education is not a matter of teaching general design laws, encoded in design methods and grammars, which are then indifferently applied in practice; nor, on the other hand, is it the teaching of technical skills considered as the merely manual or mechanical competencies necessary for the implementation of those methods and grammars. Practical design knowledge does not function in this way; it is not knowledge except in its application; and except in its application it is not so much useless knowledge as

mere nescience. The education⁵⁴ of practical design knowledge can only proceed by a continual cross-referencing and interaction of rules and their practical interpretation.⁵⁵

All of this involves the notion that designing adheres more closely to the teaching ideals of the human sciences, which are the sciences of interpretation dealing with human interactions with entailments of self-reflexivity, rather than to those of the natural sciences, which are the sciences of explanation dealing with the non-reflexive behaviour of physical objects.⁵⁶ Designing, insofar as it is concerned with products for human use, is inextricably involved with intersubjectivity, and therefore pertains to the human sciences, whose formulations and laws are necessarily typified by looseness of fit, in contrast with those of the natural sciences, which aspire to exactitude. This being so, it is appropriate that design rules should be assessed according to the criteria of human involvement, rather than by those of a science concerned with objects.

This brings us back to the theme of this paper: whereas the formulations of the natural sciences can be thought of as rigorously codified and universal and immutable in their application because they refer to physical objects which remain unchanged by the application of the laws, by contrast the rules which relate to human interactions involve subtle and complex interpretations of meanings which never repeat in exactly the same way. Designing cannot be taught as if it were an objective science since it operates in the context of the intersubjective and self-reflexive entailments of the human sciences of interpretation.

In summary, design rules, as they relate to design education, are not to be regarded as absolutes which can be mechanically applied in the same way in every case, but are to be regarded as "texts," to be interpreted in a manner appropriate to the context. No two interpretations of the rule will be the same, because no two design contexts are the same; and no one interpretation can be considered the "correct" one, since correctness is dependent on contextual particularities. The validity of the interpretation is not its correspondence to some ob-

jective criterion, but rather its fitness in a context, judged by whether or not it "rings true."

Design Rules and Design Research

Concepts of application highlight the futility of research which attempts to rationalize the design process, to reduce it to rules and methods that have universal applicability or to render it wholly amenable to computer programming. The conceptual underpinnings of these endeavours are unstable because they leave out of consideration the essential fluidity of design rules in their application. Algorithmic design methods and computer programs of the design process both presume the permanent fixity of design rules, lying hidden like eternal and immobile structures within the design process waiting to be discovered and formulated by the design scientist. Designing, however, does not proceed by reference to underlying and unchanging structures, but by way of a dialogical flow of ideas, shaping and reshaping the parts and the whole or the figures and ground in a hermeneutical cycle of everchanging interreflections. The design rules which inhere within designing are not rigid structures hidden beneath the surface of the design flow, but are part of the flow itself, merging with it and continually changing as it changes. To meet the requirement of structural permanence the design process must reduce to a frozen set of procedures which repeat in every application. This denies the complex peculiarities of design tasks, the singularities which are the very factors that make the task absorbing.

Again, these research programs accept without question the assumption that the theoretical formulations of designing are prior to and privileged over design practice. They assume that rules and methods precede practice, so that it is possible to codify them in formulae and then apply them to each individual design task. As it occurs in the lived world of design experience, however, the design process collapses the distinction between theory and practice. The theoretical rules only come to be understood in the act of their employment.

Formal statements of theoretical rules always leave something out, namely, how the rules are to be applied in practice. Design science cannot specify these rules, firstly because this involves an infinite regress,⁵⁷ and because the application of rules is not a matter of rule-based and formulable knowledge, but necessarily and simultaneously involves the exercise of interpretation and understanding, which lie beyond the reach of the rule-makers. Theory, taken in isolation, cannot stipulate the "how" of application of rules, because this is a matter of judgment, belonging not to the realms of epistemic knowledge, but to those of hermeneutic understanding, where strict and unchanging formulations of procedure cannot enter.

Little of this would be of concern if design science research were merely theoretical, in which case it would continue to be an expensive but otherwise harmless waste of effort. Nothing, however, is solely theoretical; theory and practice are not separable, and given the presence and prestige of design science its constructs and attitudes will continue to imbue practice so that epistemic rules and methods will continue to be given credence in design schools and will continue to influence design curricula and design studio strategies.

The effect can only be deleterious. Epistemic design rules focus the designer's attention on pre-selected items taken in isolation from the total design situation and thereby obscure its unique characteristics, precisely those most likely to trigger design responses; they obstruct the free play of designing by binding design activities within the straitjacket of preordained procedures; and they reinforce the barriers which separate the designer as subject from the design process as object, and thus prevent the involved absorption of the designer, the conflation of agent and agency, which is vital for invention.

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Notes

¹ The term "theory" is used in several ways. It can simply refer to a hypothesis; to a hypothesis which has accrued sufficient credibility to be generally accepted within a scientific discipline (community); or as a systematic account of some area of research, derived from a set of general propositions. Here, contrasted with practice, it refers to a systematic explanation of some observed phenomenon, expressed as a set of laws or principles.

² Plato's doctrine of knowledge is summarized in the Simile of the Divided Line and the Allegory of the Cave which immediately follows it in the *Republic* (books vi-vii). See *The Dialogues of Plato*, trans. B. Jowett, 2 vols., London: Macmillan, 1882, repr. New York: Random House, 1947, pp. 773-828.

³ These postulates are scientific rather than scientific, and would probably not be accepted as valid by most philosophers of science. Even a superficial survey of design science and CAD literature, however, shows that these concepts are still almost ubiquitously pervasive in the thinking of researchers in those fields. I have on several occasions been accused of ascribing overly simplistic beliefs to design scientists, and some have claimed to agree with much that I have indicated, but nevertheless most design science and CAD literature still reads like the product of unregenerate positivism.

⁴ Herbert Simon (*The Sciences of the Artificial*, 2nd edn., Cambridge, Massachusetts, M.I.T. Press, 1982, p. 132), defines "design science" as "a body of intellectually tough, analytic, partly formalizable, partly empirical, teachable doctrine about the design process."

⁵ A number of books on design methodology give details of the various formulations of these procedures. See, e.g., Tom Heath, *Method in Architecture*, Chichester, John Wiley and Sons, 1984; Peter G. Rowe, *Design Thinking*, Cambridge, Mass., M.I.T. Press, 1987; Geoffrey Broadbent, *Design in Architecture: Architecture and the Human Sciences*, Chichester, John Wiley and Sons, 1973; etc.

⁶ See e.g., William J. Mitchell, *The Logic of Architecture: Design, Computation, and Cognition*, Cambridge, Massachusetts, MIT Press, 1990; H. Yoshikawa, "General Design Theory and a CAD System," in T. Sata and E. Warman (eds.), *Man-Machine Communications in CAD/CAM*, Amsterdam, North-Holland, 1981; R.D. Coyne, M.A. Rosenman, A.D. Radford, M. Balachandran and G.S. Gero, *Knowledge-Based Design Systems*, Reading, Massachusetts, Addison Wesley, 1990; and Richard Coyne, *Logic Models of Design*, London, Pitman, 1988; George Stiny, "Introduction to Shape and Shape Grammars," *Environment and Planning B*, 7 (1980): 342-351. Aart Bijl (*Computer Discipline and Design Practice: Shaping Our Future*, Edinburgh University Press, Edinburgh, 1989) has reservations about this approach; and Terry Winograd and Fernando Flores (*Understanding Computers and Cognition*, Reading, Massachusetts, Addison-Wesley, 1987) subject it to a penetrating critique.

⁷ Hans-Georg Gadamer, *Truth and Method*, London, Sheed and Ward, 1975; *ibid.*, *Reason in the Age of Science*, trans. Frederick G. Lawrence. Cambridge, Mass., MIT Press, 1981.

⁸ Gadamer, 1975, *op. cit.*, pp. 289-305.

⁹ Joel C. Weinsheimer, *Gadamer's Hermeneutics: A Reading of Truth and Method*, New Haven and London, Yale University Press, 1985, pp. 184 ff.

¹⁰ Gadamer, 1975, *op. cit.*, pp. 284 f.; *ibid.*, "The Problem of Historical Consciousness," in Paul Rabinow and William M. Sullivan (eds.), *The Interpretive Turn—A Second Look*, Berkeley, University of California Press, 1979, pp. 82-140 (pp. 120 ff.), repr. from the *Graduate Faculty Philosophical Journal* 5, 1 (1975); Weinsheimer, *op. cit.*, pp. 184 ff. Fred Dallmayr ("Hermeneutics and Justice," in Kathleen Wright (ed.), *Festivals of Interpretation: Essays on Hans-Georg Gadamer's Work*, Albany, State University of New York, 1990, pp. 90-110) shows the implications of these concepts for the inter-

pretation of the American Constitution.—The concept of equity cannot be rigorously defined and thus escapes the net of logic. Any attempted definition is a tautology: equity is what is equitable.

¹¹ Cf. Weinsheimer, *op. cit.*, pp. 190 ff.

¹² *Ibid.*, p. 189.

¹³ Gadamer, 1975, *op. cit.*, pp. 278; *ibid.*, 1979, pp. 115 ff.; Bernstein, *Beyond Objectivism and Relativism*, Oxford, Basil Blackwell, 1983, pp. 38 ff.; *ibid.*, "Philosophy in the Conversation of Mankind," in Robert Hollinger, (ed.) *Hermeneutics and Praxis*, Notre Dame, Indiana: University of Notre Dame, pp. 54-86 (pp. 84 ff.); *ibid.*, "From Hermeneutics to Praxis," in Hollinger, *op. cit.*, pp. 272-96 (277 ff.); Roy J. Howard, *Three Faces of Hermeneutics: An Introduction to Current Theories of Understanding*. Berkeley, University of California Press, 1982, 127 ff.; Richard J. Palmer, *Hermeneutics: Interpretation Theory in Schleiermacher, Dilthey, Heidegger and Gadamer*, Evanston, Northwestern University Press, 1969, pp. 186 f.; Georgia Warnke, *Gadamer, Hermeneutics, Tradition and Reason*, London, Polity Press, 1987, pp. 91 ff.; Charles Larmore, "Moral Judgment." *Review of Metaphysics* 34, 2 (1981): 275-296 (pp. 289 ff.); Robert Hollinger, "Practical Reason and Hermeneutics." *Philosophy and Rhetoric* 18, 2 (1985): 113-122 (pp. 113 ff.); Michael Calvin McGee, and John R. Lyne, "What Are Nice Folks Like You Doing in a Place Like This?" in John S. Nelson, Allan Megill and Donald A. McCloskey (eds.), *The Rhetoric of the Human Sciences. Language and Argument in Scholarship and Public Affairs*. Madison, Wisconsin, University of Wisconsin Press, 1987, pp. 381-406, (pp. 294 ff.); Jürgen Habermas, "A Review of Gadamer's *Truth and Method*," in Fred R. Dallmayr, and Thomas A. McCarthy (eds) *Understanding and Social Inquiry*. Notre Dame and London, University of Notre Dame Press, 1977, 335-363, (p. 352); Weinsheimer, *op. cit.*, pp. 184 ff.; *ibid.*, "'London' and the Fundamental Problem of Hermeneutics," *Critical Inquiry* 9 (1982): 309-26, (pp. 306 ff.); Rüdiger Bubner, *Essays in Hermeneutical and Critical Theory*, New York, Columbia University Press, 1988, p. viii; Lois S. Self, "Rhetoric and Phronesis: The Aristotelian Ideal," *Philosophy and Rhetoric* 12, 2 (1979): 130-145, (131 ff.); John McDowell, "Virtue and Reason," *The Monist* 62 (1979): 331-50; Paul Schuchman, "Aristotle's Phronesis and Gadamer's Hermeneutics." *Philosophy Today* 23 (1979): 41-50, (pp. 42 ff.); James S. Hans, "Hermeneutics, Play, Deconstruction," *Philosophy Today* 24 (1980): 297-316, (pp. 309 ff.); David Wiggins, "Deliberation and Practical Reason," in A. O. Rorty (ed.), *Essays on Aristotle's Ethics*, Berkeley, University of California Press, 1980, 221-240 (pp. 227 ff.).—Gadamer's treatment of Aristotle's doctrine of *phronesis* is an example of his own hermeneutics in action. By applying Aristotle's text to the question of the universal validity of scientific method he not only comes to a new understanding of Aristotle's text, but at the same time reaches a new understanding of scientific method.

¹⁴ *Nicomachean Ethics* 1103b. See *The Ethics of Aristotle*, trans. J. A. K. Thomson, Harmondsworth: Penguin Classics, 1965. Cf. Larmore, *op. cit.*, p. 290.

¹⁵ *Nicomachean Ethics* 1109b 23, Cf. Larmore, *op. cit.*, p. 290.

¹⁶ This involves the concept of a "fusion of horizons," which occupies a prominent place in Gadamer's philosophy. See Gadamer, 1975, pp. 273 f., 337 f. and 358.

¹⁷ Gadamer, 1975, p. 283.

¹⁸ Gadamer, 1975, p. 283.

¹⁹ *Ibid.*, p. 286.

²⁰ *Ibid.*, p. 274. Early hermeneutics specified three elements, namely, understanding (*subtilitas intelligendi*), explication (*s. explicandi*), and application (*s. applicandi*), in which *subtilitas* refers to a capacity or power.

²¹ Gadamer, 1975, p. 285.

²² For the simultaneity and coincidence of understanding, interpretation and application, see Gadamer, 1975, pp. 274 ff.; Palmer, *op. cit.*, pp. 186 ff.; Bernstein, 1983, *op. cit.*, pp. 38 ff.; Habermas, *op. cit.*, p. 352; Weinsheimer, 1985, *op. cit.*, 184 ff.; Hans, 1980, p. 309.—Derrida would agree that interpretation and understanding are one and the same, but draws different conclusions. See Hans, *op. cit.*, p. 309. Heidegger, on the other hand, distinguishes interpretation and understanding. See Hubert L. Dreyfus, *Being-in-the-World: A Commentary on Heidegger's Being and Time, Division I*, Cambridge, Massachusetts, MIT Press, 1991, pp. 184 ff.

²³ Gadamer, 1975, p. 305.

²⁴ Hans, 1980, p. 309.

²⁵ Gadamer, 1979, p. 286.

²⁶ Even though a strong case could be made that every design decision has an ethical component since it is eventually conducive or not to the well-being of people, it is not intended here to develop the ethical implications of the concept of *phronesis* for designing. This involves a number of complications that would require a separate paper to examine in detail.—Designing also involves the exercise of tacit knowledge, which discloses itself in skill and experience but cannot be formulated and therefore cannot be codified in the form of rules. While fully recognizing the very important part played by tacit knowledge, I will here confine the discussion to rules which can be written down and therefore act as texts.

²⁷ An argument can be made that the application of every law, including scientific laws and whether relating to physical or human matters, always involves an act of interpretation in its application in a practical situation. Whether this is so or not does not alter the arguments being developed here, since we are dealing with perceptions concerning the application of laws that are commonly accepted in design science and CAD.

²⁸ Cf. Ludwig Wittgenstein, *The Blue and Brown Books*, Oxford, Basil Blackwell, 1960, pp. 25 ff.; *ibid.*, *Philosophical Investigations*, Oxford, Basil Blackwell, 1953, pp. 39 ff. See also Hubert L. Dreyfus, *What Computers Can't Do: The Limits of Artificial Intelligence*, New York, Harper and Row, revised edition, 1979, p. 203.

²⁹ Gadamer, 1979, p. 286.

³⁰ "Experience" is not an accumulated store of general laws which are deductively applied to individual cases, but involves such matters as making connections by way of a process akin to the perception of "family resemblances" described by Wittgenstein (1953, *op. cit.*, §§66-75). See A.B. Snodgrass and R.D. Coyne, "Models, Metaphors, and the Hermeneutics of Designing," Working Paper, Faculty of Architecture, University of Sydney, 1991, pp. 14 ff.

³¹ Also note in this that criteria of "success" or "correctness" are matters not of "opinion" or subjective preference but of variations of interpretation.

³² Bubner, *op. cit.*, p. viii.

³³ This is an example of the functioning of the hermeneutical circle, in which a fore-conception of the completed product plays back to modify the components of the design situation, which new interpretation in turn influences the image of the product. Only at the end of the process is the product clearly defined.

³⁴ Cf. Wiggins, *op. cit.*, p. 237.

³⁵ The following notions concerning rules and game-playing are adapted from Gadamer, 1975, *op. cit.*, pp. 91 ff., where as part of his strategy to demonstrate alternates to Descartes' subject-object model of ontology, he uses the metaphor of game-playing to develop the idea that the experience of art can make a claim to truth unlike the objective stance defined by science. Gadamer's exposition of the nature of play has other relevance for designing than that indicated here, especially in the consideration of the design product as a work of art. I hope to develop these considerations elsewhere. For commentaries on Gadamer's philosophy of play, see Bernstein, 1983, *op. cit.*, p. 120 ff.; Richard L. Gregory, "Touching Truth," in Hilary Lawson and Lisa Appignanesi (eds.), *Dismantling Truth: Reality in the Post-modern World*, London, Weidenfeld and Nicolson, 1989, pp. 93-100 (p. 97); Howard, *op. cit.*, pp. 143 ff.; Palmer, *op. cit.*, 171 ff.; Warnke, *op. cit.*, pp. 48-50; John Hogan, "Gadamer and the Hermeneutical Experience," *Philosophy Today* 20 (1976): 3-12 (p. 10); Theodore Kisiel, "The Happening of Tradition: The Hermeneutics of Gadamer and Heidegger," in Hollinger, *op. cit.*, 3-31 (pp. 16 f.); John D. Caputo, "The Thought of Being and the Conversation of Mankind: The Case of Heidegger and Rorty," in Hollinger, *op. cit.*, 248-271 (p. 257); Richard Bernstein, "From Hermeneutics to Practice," in Hollinger, *op. cit.*, pp. 272-296 (p. 274); Weinsheimer, *op. cit.*, pp. 100-7; Hans, *op. cit.*; *ibid.*, "Hans-Georg Gadamer and Hermeneutic Phenomenology," *Philosophy Today* 22 (1978): 3-19 (pp. 8 f.); Linge, *op. cit.*, pp. xxii f.; Charles Stephen Byrum, "Philosophy as Play," *Man and World* 8 (1975): 315-326. Johan Huizinga's classic (*Homo Ludens*, Boston, Beacon Press, 1970) develops other aspects of the theme.

³⁶ Cf. Warnke, *op. cit.*, pp. 48-50.

³⁷ Cf. Gadamer, 1975, *op. cit.*, p. 99; Howard, *op. cit.*, 143 ff.

³⁸ The case of designing is more complicated than that of game-playing, however, in that whereas the rules of the game are clearly laid

down, those governing designing comprise not only those which are explicitly formulated, but also a multitude of unspoken rules deriving from the cultural tradition of the designer in general and from the design tradition in particular. The designer, consciously or unconsciously, is bound by the rules, both explicit and implicit, of the design tradition, which rules are absorbed from both society at large and from the micro-societies of design schools, the design professions, and so on. Within the bounds of these socially imposed rules the designers are free to design in any way they choose, just as the players in a game are free to play the game as they will, so long as they play by the rules. A strictly defined design rule cannot take these socially determined factors into account because for the greater part they cannot be objectified, being part and parcel of the designer's makeup.

³⁹ Heidegger, *Der Satz vom Grund*, Pfullingen: Neske, 1957, p. 188, quoted in Kisiel, *op. cit.*, p. 16. Cf. Hogan, *op. cit.*, p. 10.

⁴⁰ Gadamer, 1975, *op. cit.*, p. 92.

⁴¹ Like players in a game who enter into a game-space (*Spielraum*), designers enter a closed world cut off from the everyday world when they become involved in designing. See Hogan, *op. cit.*, p. 10; David E. Linge, "Editor's Introduction," in Hans-Georg Gadamer, *Philosophical Hermeneutics*, Berkeley, University of California Press, 1976, pp. i-lviii (p. xxiii).

⁴² Cf. Richard Coyne and Adrian Snodgrass, "Where Do Design Ideas Come From?" Working Paper, Faculty of Architecture, University of Sydney, 1991.

⁴³ Cf. Gadamer, 1975, *op. cit.*, p. 261.

⁴⁴ This relates to the concept of self-presencing, developed by Hans, 1980, *op. cit.*, pp. 313 ff.

⁴⁵ Heidegger, *Holzwege*, Frankfurt a. M.: Klostermann, 1957, p. 312; quoted in Kisiel, *op. cit.*, p. 17.

⁴⁶ *Idem.*

⁴⁷ The concept of the paradigmatic character of rules is so deeply engrained in language that it is difficult to find words to speak of flexible rules. English does not, to my awareness, have a word to designate a rule that changes. All words relating to the concept of law, in any of its senses, carry the connotations of something which is strictly defined and to which actions are expected to conform.

⁴⁸ Static design rules equate dead metaphors, which no longer function to intimate fresh initiatives and new networks of connections. See Snodgrass and Coyne, "Models, Metaphors,.....," *op. cit.*, pp. 20 ff.

⁴⁹ The concept of design dialogue is developed in Snodgrass and Coyne, "Is Designing Hermeneutical?" *op. cit.*

⁵⁰ The design tradition is a store of both explicit and tacit design rules.

⁵¹ For the greater part design science and CAD researches are not "scientific" because they do

not involve experiment. The "scientific" approach to design is more the expression of a scientific ideology or belief system than of a truly scientific outlook.

⁵² This advocacy is implicit in the writings of much design science and CAD literature, and several renowned CAD researchers have explicitly voiced their advocacy of this strategem to us in seminars and conversations.

⁵³ True "knowing," which involves understanding, is distinguished from a mere "knowing of," which is a matter of storage of information. Whereas a computer can store and manipulate this type of knowledge according to rule, it cannot understand it, and therefore cannot truly "think."

⁵⁴ I use this term to highlight that education is a matter of educating, of "bringing out or developing from latent or potential existence" (from Lat. *e-ducere*, to lead out). Education is also an "edification," a building (from Lat. *ficium*, from *facere*, to make) of a temple (Lat. *aedis*). The concept of edification (*Bildung*) plays an important role in Gadamer's philosophy. See Gadamer, 1975, *op. cit.*, p. 10.

⁵⁵ This again works according to the functionings of the hermeneutical circle.

⁵⁶ See Snodgrass and Coyne, "Is Designing Hermeneutical?" *op. cit.*, pp. 7 ff., where references are given.

⁵⁷ See above, p. 4.

Psychoanalysis, Hermeneutics and Science

Three Views

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The development of psychoanalysis was undoubtedly one of the distinguishing features of the *Zeitgeist* of twentieth century western culture. Emerging from the context of the developing discipline of psychiatric medicine, the "discovery" was regarded by its founder as a scientific breakthrough on the scale of those of Copernicus and Darwin. But in science, psychoanalysis has certainly not swept all before it. In its home town of psychological medicine psychoanalysis has achieved a modest place as one of a variety of frameworks for theory and practice. In academic psychology, one the other hand, it has rarely achieved more than a marginal status, while within orthodox philosophy of science it has been commonly denounced as a prototype of pseudoscience.

Despite this modest success at home, psychoanalysis has continued to excite a considerable body of interest within the humanities. At first glance this sounds odd. Why should a theory of psychopathology be of interest to, say, literary critics or art historians. One doesn't tend to find "Copernican" or "Darwinian" cultural theorists staking their claims in the humanities, so why Freudians? The answer to this becomes clearer when one starts to look at Freud's construal of psychological disease. For Freud, the symptoms that led his hysterical patients to him were bizarre forms of human expression:

meaningful utterances of the psyche which had become superficially unintelligible and required interpretation. Psychoanalysis was seen as relevant for the humanities not because, as is sometimes assumed, perverse critics wanted to degrade art works to the status of diseases, but because Freud had elevated certain diseases to the status of art works—odd, private art works, but art works none the less: complexes of symbols giving expression and determinate articulation to a psyche's emotionally invested experience and understanding of the world.

So, in certain respects, psychoanalysis has claimed dual citizenship and thus a right to have its say in the life of each of the West's "two cultures"—a situation which has not been without interesting consequences. On the one hand, one effect of its claim to be a science has been to revive the question of the existence of a distinct form of hermeneutic science, an interpretative science of human forms of expression, methodologically and structurally distinct from natural sciences like physics. On the other hand, the existence of psychoanalysis within the humanities has raised the question of the adequacy of those existing forms of humanistic interpretation. Both of these issues might be thought of as aspects of the question of the relation of psychoanalysis to "hermeneutics." In this paper I want to examine just a few sides of this question. I make no

claims as to the evaluation of psychoanalysis as a form of knowledge, but in order to evaluate its claims we presumably must have some understanding of what sort of knowledge it claims to give. It is this preliminary question that is under investigation here.

Grünbaum's Medical Model

What is at issue in the claim that psychoanalysis is a distinctly hermeneutic discipline might be brought into relief if we examine the recent critique of such an interpretation by the philosopher of science Adolf Grünbaum.¹ While critical of psychoanalysis Grünbaum challenges the view of Karl Popper that psychoanalysis is an unfalsifiable pseudoscience. Rather, psychoanalysis, like any other medical theory of pathogenesis, makes law-like general claims about causal processes. Its etiological claims are testable and, he maintains, largely without empirical support.

In the epistemology characteristic of the classical physical sciences, the known object is construed as, or as part of, a deterministic system. The formulation of general laws allows future states of the system to be calculated on the basis of a knowledge of its initial conditions. Such predictability is crucial in two ways, it allows both experimental testing of general laws and the purposeful intervention into or manipulation of the system for

the achievement of predictable results. On this view of knowledge, understanding is the ability to predict.

For Grünbaum, this is the epistemology which is relevant to the assessment of psychoanalytic claims to knowledge. On this understanding psychoanalytic knowledge and practice is conceived as structurally the same as that form of knowledge and practice found in somatic medicine. Thus a psychoneurosis, like a somatic disease, is to be understood in terms of what it was that brought it about—its pathogenesis. Against a background of its healthy functioning, the somatic system is seen as having its function disrupted by the effects of some abnormal agency—the pathogen; and so to diagnose a diseased body is to identify it as an instance of some general class of malfunctioning bodies with a common cause. It is this causal knowledge that allows the instrumental intervention into the system in a way designed to negate the effects of the pathogen, for example, by removing it.

Read on this model, psychoanalytic knowledge is essentially general knowledge concerning the pathogenesis of certain dysfunctional states, the psychoneuroses, and it is this knowledge which is seen as allowing their therapeutic elimination. The psychoneuroses can be seen as forming a class because they share a common kind of pathogenesis: this is the repression, the rendering unconscious, of particular, threatening memories. The repressed memory lodges in the mind like a pathogenic organism lodges in the body. Health, that is, normal function, is thus restored by ridding the mind of this unconscious memory, in the way that the body might be rid of a virulent microorganism.

For Grünbaum, such was the basic idea behind Freud's theory and practice from his earliest to his latest days. On this reading psychoanalytic therapy emerges from and is continuous with Freud's and Breuer's earlier cathartic therapy—the practice of hypnotically inducing in patients memories of earlier traumas lived through, memories that had been hitherto consciously unavailable. Freud famously described his hysterical patients as “suffering from reminiscences” and therapy was con-

ceived as a type of removal of these pathogenic reminiscences.² The operative notion here was “catharsis.” The repressed memory had been accompanied by a bottling up of the emotion or affect that accompanied it and the catharsis of this affect was achieved by the affective discharge accompanying the memory. In the context of the cathartic concept of the cure, the practice of hypnosis here looks like a type of psychological surgery allowing the therapist to reach into the patient's mind and remove the pathogen, the offending “reminiscence.”

Freud was, in fact, soon to abandon hypnosis and the cathartic method in favour of the psychoanalytic session and the instrument of free association. He also came to abandon the idea that what was repressed was necessarily a memory: fantasized wish fulfillments came to play the same role as memories of actual events. Nevertheless, he later maintained that this precursor to psychoanalysis, Breuer's cathartic method, was “despite every extension of experience and of every modification of theory ... still contained within it as its nucleus.” (SE, 19: 194) And despite the modifications and extensions of the theory of repression, it continued to be for Freud “the corner stone on which the whole structure of psychoanalysis rests.”

It is on the basis of such a medical model that Grünbaum has criticized Jürgen Habermas's attempt at a hermeneutic construal of psychoanalysis in *Knowledge and Human Interest*.³ Habermas had argued that there were structural differences demarcating psychoanalysis from forms of explanation in the physical sciences. The physical sciences formulate and apply causal laws but, Habermas claimed, the knowledge of psychoanalysis was a type of “reflective” self-knowledge in which a causal nexus was “dissolved.” But, claims Grünbaum, if psychoanalysis is any form of knowledge at all, it is, like other sciences, a science of deterministic systems and causal processes: it attempts to reach knowledge of causal relations and utilize this knowledge in its cures. There is no mysterious “dissolving” here nor any structural difference to other sciences: in virtue of its knowledge of the gen-

eral laws of psychoneurotic pathogenesis, psychoanalytic therapy aims in any particular case to eliminate an effect by removing its cause.

Memory as Pathogen

It does not take a great deal of reflection to appreciate the oddities involved in Grünbaum's model here. Grünbaum's Freud is the psychological surgeon adept at the removal of disease inducing memories, and like other surgeons likes to show us what he has found. Imagine working one's way around the display cases of the museum of medical pathology with their grisly array of excised and bottled tumors, cysts, and tapeworms and encountering a case entitled “memories” perhaps next to another labelled “fantasies.” What would one be looking at? Other pathogens might be difficult to display—viruses, for example. But there we might be shown a model or a photograph taken via electronmicroscopy. But what is it for me to see, even indirectly or in a facsimile, another person's memory?

Perhaps we might think of Freud's case histories as his display cases. It is in their pages that we find the pathogenic memories or reminiscences displayed before us. But surely this is different to the display case. What we find in the case histories are stories related to us by Freud, stories which had earlier been related to him by his patients.

It is communication which is the medium of our learning here, not direct observation: I can only learn about your memories or fantasies from your telling me about them. This is a consequence of the fact that memories are intentional states, they are centered on subjects and exist for them. When we come across a memory related to us in one of Freud's case histories there is no getting beyond the fact that that memory was *someone's*, and it belonged to them as intentional subject in a much stronger sense than a cyst or a tapeworm belonged, temporarily, to someone's body. Cyst's and tapeworms can be excised and then displayed and thought of as things in abstraction from their relation to their original “hosts”. But a memory without the person for whom it is a

memory, is simply no longer a memory.

The forced nature of the reading of the conception of memory as pathogen is made clear when we focus on what Freud's supposed surgical excision consists in. Looked at from one angle the process is the removal of a pathogenic memory and the discharge of that bottled up affect associated with it. Looked at from another, it is simply the process in which patients now consciously remember that which they had earlier forgotten and, crucially, remembers that event with that same emotional colouring with which it was originally experienced. That is, it is just the process of the patients coming to recall a past experience, coming to re-know after an intervening period of ignorance, something about themselves—events they lived through and, importantly, how they experienced and reacted to those events.

Thus Grünbaum's medicalized construal of Freud conveniently forgets that the effect of this alleged psychotechnical intervention is not actually the cure itself but the creation of knowledge—the memory of the traumatic past event—and that is this second *knowledge* which is linked to the cure, the lifting of the symptom. Furthermore, in the case of this second kind of knowing involved, it is by no means clear that the knowledge here works in the way that scientific knowledge typically "works". It is far from obvious that the patient's knowledge is something which allows the patient then to *do* anything at all. What can you *do* with a memory or a remembered fantasy that would be relevant to the removal of the symptoms? If I found out that my symptoms were caused by my smoking habit, this knowledge would allow me to act in a way which removes their cause. But there, without the action, knowing would be of no help at all. In the case of neurotic symptoms, however, it seems to be just the knowledge itself, and not any technical action or intervention enabled by knowing, that is curative. The patient has simply remembered an experience in its full subjective colouring, and this, as strange as it seemed to Freud at the time and as strange as this still seems to me now, resulted in the lifting of the symptoms.

Let us focus on the difference between forms the two types of knowledge encountered so far. We might capture this difference by talking of the analyst's knowledge of the patient from the external or "third person point of view" and the patient's "first person" knowledge or memory of their own past. It is this inseparability of knowing subject from known "object" in the latter case which demarcates it from the usual knowledge of science.

In the sciences, the particularity of the identity of the knower can be of no real importance. Scientific knowledge can be communicated, shared, passed on to others, corroborated or challenged by others, precisely because of this fact. In such knowledge, objectivity is a function of its universalizability and so the existence of any *particular* relationship between knowing subject and known object must be effaced. But the *analysand's* knowledge surely cannot be like this. Here, there is the most intimate relation between knowing subject and known object possible—that of identity.

There can, of course, be knowledge of the self which preserves the distance, the objectivity and universalizability of science. On learning that the cigarette smoke I suck into myself is a pathogen and I can thereby intervene into my life and effect a cure. In that case I would be both therapist and patient at the same time and I would know my diseased body in the same way that I would know anyone else's. My knowledge there is about *bodies in general* and I know about mine only as a particular instance. Among the multitude of bodies my knowledge applies to, one of them just *happens* to be mine.

But it would seem that this third person-like, distanced knowledge of the self, within which one, as it were, steps outside the self and views it as just one of a kind, is not appropriate here. Let us focus on Freud's comments on the character of that memory which is to be retrieved in catharsis: the symptoms disappeared when the memory had been brought to light and when the *accompanying emotion was aroused* and, Freud continues, "when the patient had described that event in the greatest possible detail and had put the affect into

words. Recollection without affect almost invariably produces no result. The psychological process which originally took place must be repeated as vividly as possible; it must be brought back to its *status nascendi* and then given verbal utterance." (S. E., 2: 6)

Clearly this is not a case of coming to know the existence of a series of events from the viewpoint of a detached observer. This is rather to come to re-experience those lived through events from the very perspective that they were in fact lived through. The memories must be re-established in all their affective colouring—colouring which accrues from their peculiar significance for one person only, that very person doing the remembering. It is this knowledge which, according to Freud, had the direct, curative effect.

Already this sounds as if the knowledge involved here is like that which various hermeneutic theorists have claimed is relevant to disciplines like history or anthropology—"insider's" knowledge of "what it was like" to exist within a certain cultural world and to see and evaluate things *from its point of view*. In psychoanalytic remembering, the patient not only must remember *that* something happened, they must remember what it was like for them that that thing happened. In history or anthropology, of course, it is a question of knowledge of other people, not the self. But we might think of repression as having made the analysand a stranger to himself, enabling him to play anthropologist to himself. Furthermore, even in this earliest, most medicalized phase of psychoanalytic practice, the idea that the experience must be "given verbal utterance" makes it sound as if we are in the realm of the hermeneutic sciences. The patient is required to express the events in the manner we expect of the poet or the novelist—here vividness is at issue, it must be reported in detail such that the emotional content of the experience is "put into words."

Hermeneutics

We might compare this to a classic statement of the hermeneutic approach to history given in the early nineteenth century by Wilhelm von Humboldt. In "The Task of the Histo-

rian," Humboldt had likened the historians work to that of the poet. While she must, of course, work from a basis of actual not imagined events, she must, like the poet, synthesize the diverse fragments of the historical record into a coherent form. This synthetic, poetic form of the historian's work is as crucial to it qua form of knowledge as its representational accuracy because with it is conveyed a certain truth which may be otherwise lost. Humboldt talks of a "sense of reality" which the Historian must "awaken and enliven" and "refine" and "his enterprise is circumscribed subjectively by the development of this notion, as objectively by that of depiction."⁴ What Humboldt has in mind by the "sense of reality" to be enlivened becomes clearer when he alternately describes the need to "prevent its dissipation in the realm of mere ideas". Humboldt seems to be suggesting that our sense of reality of the past is always in danger of being lost in the abstraction of ideas—an abstraction which severs us from this past. Thus, in his task of representing the past in the collective memory, the historian must tread a "narrow middle path": besides the danger of having no memory at all there is that of its dissipation "in the realm of mere ideas,"⁵ a type of remembering which we might describe with Freud as "recollection without affect", a recollection which, in terms of the purpose of historical memory "almost invariably produces no result."

The preservation of a sense and not just a knowledge of the past is crucial for Humboldt because of its consequence for the practical life of the knower: there "there can be no successful intervening in the press of events" without this form of memory which stays on the middle path between forgetting and abstract knowing.

When pursued, however, it would appear that there is a major hitch with the hermeneutic conception of psychoanalytic remembering. In the classical tradition of hermeneutic thought which characterized nineteenth century historiography and which was codified at the start of this century by the philosopher Wilhelm Dilthey, hermeneutic understanding is conceived as a knowledge of others. It is the knowledge of what it is like to

be someone *else*—of what it is like to experience and know the world from *their* point of view. The typical hermeneutic practitioner is therefore the anthropologist or the historian because we commonly want to find out what it is like to be a member of societies as removed from us as the Pintubi or the ancient Athenians. And it is commonly assumed that our ability to do this is somehow bound up with the fact that we already know, or can know on reflection, what it is like to be *us*. We must know this, or be able to know this, because, it is commonly assumed, self-knowledge is the basis from which we know of others by analogy. We can understand our possible alternative selves because we share with them some underlying humanness; and it is this shared humanness between subject and object of knowledge which makes hermeneutic knowledge distinct.⁶

But psychoanalysis appears to start from the premiss that any immediate knowledge of our individual selves is wrought with problems as it posits vast areas of our own intentional lives going on behind our backs. This doesn't rule out a hermeneutic interpretation of ourselves. We still have a conscious mind, and we might start off from this basis in an attempt to understand our own unconscious. In this case, the conscious mind is anthropologist and the unconscious is foreign tribe. In fact Freud appeals to this very model himself. In the paper "The Unconscious" he defends his theory of the unconscious in this way:

The assumption of an unconscious is, moreover, a perfectly *legitimate* one, inasmuch as in postulating it we are not departing a single step from our customary and generally accepted mode of thinking. Consciousness makes each of us aware only of his own states of mind; that other people, too, possess a consciousness is an inference which we draw by analogy from their observable utterances and action, in order to make this behaviour of theirs intelligible to us. ...

Psychoanalysis demands nothing more than that we should apply

this process of inference to ourselves also—a proceeding to which, it is true, we are not constitutionally inclined. If we do this, we must say: all the acts and manifestations which I notice in myself and do not know how to link up with the rest of my mental life must be judged as if they belonged to someone else: they are to be explained by a mental life ascribed to this other person. (S.E., 14: 169)

However, when this idea is pursued it starts to look more and more strange. The classical Diltheian conception of the conditions of understanding others is based on some idea of an underlying shared "common humanity". Human life may take a plurality of cultural forms, in each of which various possibilities are developed at the expense of others. Nevertheless, this cultural or spiritual diversification can occur because of something underlying which is shared and which differentiates the human species uniquely from the rest of the universe. In hermeneutic understanding we bridge these differences in spirit (*Geist*) and it is *as* forms of spirit that we know others, *not* as forms of nature.

But Freud's hermeneutic of the unconscious does not easily fit this pattern. On the Diltheian model we face the expressions of the unconscious as expressions of patterns of desire and belief of which we can imagine ourselves capable. This works well for the most superficial layers of Freud's analyses. In one case history, for example, a woman comes to remember having had a thought from which she had turned her mind because of its shocking nature: in mourning, while standing by the bed on which lay her dead sister, she had the thought that the only obstacle to her own secret love of her brother in law had now been removed (S.E., 2: 156).⁷ The memory of this thought had been repressed but on retrieval it is clearly intelligible as a thought. But such analyses are not at the heart of psychoanalysis. As Freud pursues chains of association, intentional states are encountered whose objects and aims are barely recognizable. This is because psychoanalysis uncovers the structures of intentional states that

have been formed at infantile, primitive stages of the mind's development, stages where basic distinctions of consciousness such as that between self and other, or between real and hallucinatory gratification cannot be discerned. These are hardly states which we can readily understand "what it is like" to be in. Rather, it is here that Freud's energetic analogues seem indispensable. We seem to need his 19th century thermodynamic model with its images of the flow of psychic energy along pathways, energy which can be dammed, rerouted, changed in its qualitative manifestations but not in its quantity, an energy always seeking discharge.

The archaic mind presents us with the limits of the traditional hermeneutic concept of the understanding. And yet the archaic mind is to be interpreted into the language of consciousness with its notions of intentionality. These limits demonstrate the departure of psychoanalysis from Dilthey's codification of traditional hermeneutics in that for Dilthey the dichotomy between mind and nature is absolute. While seeing the mind as an expression of life processes, there is, nevertheless an absolute border between life as a biological phenomenon and the life of the mind in its realm of language and culture. But in his theory of archaic mental structures, Freud attempts to grasp the continuity between that bundle of natural instincts with their patterns of their discharge on the one hand and the intentional mind which grows out of that bit of nature on the other. This is not, of course, a process which develops outside of a cultural context of social norms, cultural meanings and interpretations and so on, into which the infant is born. But while all Dilthey could say was that the individual as material being was the "support" of a type of culturally encoded ideal self, Freud tries to unravel the actual mechanisms of this process. Dilthey's notion of understanding as the "recognition of the self in the other" always applies between two minds, two individual formations of spirit; but if we read Freud's interpretations as a form of hermeneutics of the unconscious, then this seems to involve a process in which consciousness as an element of spirit comes to recognize itself in

something which is essentially a piece of nature.

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Psychoanalysis cannot be reduced to the type of knowledge found in the natural sciences because it has an irreducible hermeneutic element. But neither does it seem that it can be adequately thought of in terms of the classic hermeneutic paradigm with its dichotomizing of the natural and cultural sciences, the sciences of "Natur" and "Geist." However, the assumptions behind the traditional hermeneutic framework of Dilthey have been criticised in the name of hermeneutic philosophy by Hans-Georg Gadamer. From his point of view we might start to see how psychoanalysis might be thought of as a hermeneutic discipline because he has challenged traditional hermeneutic thought by way of an approach to interpretation which has parallels to that of Freud. In the following section I sketch some elements of Gadamer's hermeneutics which allows us to see what is at issue in psychoanalysis.

Gadamerian Hermeneutics and Psychoanalysis

Gadamer provides a possible model for thinking about the nature of the operative memory which plays a role in psychoanalysis with his concept of "effective historical consciousness", a concept which he develops in order to displace that of "historical consciousness", essentially the idea of an objective, scientific knowledge of the past.⁸

Traditional hermeneutic thinkers like Dilthey had thought of historical consciousness as a type of knowledge which contrasted with the structure of that knowledge formed in the natural sciences. The objects of historical consciousness were other forms of human life, agents like ourselves embedded in cultural practices different to our own. Importantly we could understand such agents from the first person point of view; we could *recognize* ourselves *in them*. But on this model, history was still conceived as objective. As the structural dissimilarity between the two forms of science was motivated by the struc-

tural differences between their objects, historical consciousness's unique structure was, in fact, a precondition of its "objectivity".

But for Gadamer, hermeneutic understanding must be opposed not just to the determinate representations of natural science. It must refuse the wider identification of understanding with objective knowledge *per se*. Following Heidegger, Gadamer sees all "objective knowledge" as resting on a more fundamental unity linking knower and known and allowing knowledge to take place. Heidegger had seen the relation of objective knowledge of the sciences as derivative from an underlying instrumental involvement of knower with that which was known. As emergent from a mode of practical relation to the world such objective knowledge both presupposed and displaced an agent-centered practical form of knowledge. Gadamer applies this idea of an infrastructure to objectivity to a knowing subject's relation to its own past.

On such an approach to knowledge, objective historical knowledge can never be the basic form of relationship within which one stands to one's own past. Conceived as a known object (*Gegenstand*), the past stands (*stehen*) over against (*gegen*) the knowing subject. But there is a much more basic practical relation between me and the past for the past is not just the locus of another form of life, it is also, as it were, where I come from. And for Heidegger and Gadamer, this applies equally to me *qua* intentional subject: I can only be a knowing, intentional subject in virtue of the fact that I belong to a linguistic and cultural community and inherit its ways of interpreting and making sense of the world. It is this cultural heritage which comes to me from the historical past, linking me with it, and contributing to the conditions under which knowledge can take place. Yet the Diltheian goal of historical consciousness construes the past as a vast panorama of things and events laid out before the subject and viewed from the outside. Regardless of how comprehensive it becomes, the links between the past and those present conditions which allow it to be known will never be revealed because of the fundamental split between subject

and object constitutive of objective knowledge.

Another context in which Gadamer focuses on the complexity of the nature of knowledge of the past appears in his discussion of the cultural category of the classic. He points out that in the sixteenth and seventeenth centuries the classic had a suprahistorically normative status: the classic works from the past were models to be imitated. With the rise of the historical sciences and the development of historical consciousness, however, the classic lost its normative status to become a *historically descriptive stylistic* concept. But such historicalization, thinks Gadamer, neglects the extent to which at a practical level the classic continued to have a normative status. Again Gadamer's point was that the objectification of the past characteristic of cultural history obscured the degree of unity existing between past and present and the degree to which the past contributed to those present conditions under which one's interpretative powers could be turned back onto the past itself.

Gadamer's criticism of the objectification of historical knowledge follows closely from Nietzsche's diagnosis of the nihilistic effects of scientific history, itself a diagnosis anticipated by von Humboldt's criticism of that abstract knowledge of the past within which the "sense of reality" is dissipated. For Gadamer, it is precisely to the degree that something is made an object of objective knowledge that its value or normative relevance for the knower is bracketed. This is a consequence of that aspect of scientific knowledge discussed earlier, that the object of scientific knowledge must be extracted from its relationship to the particularity of the knower. Known from no particular place within it so that no particular objects have more significance than others, the world becomes "disenchanted" or "motivationally inert". When the past is conceived independently of any particular temporal relation to the point from which it is known, it too must become stripped of value in the same way.

It is to skirt this sort of objectivizing danger that Gadamer replaces the concept of historical consciousness and its objectivistic conno-

tations with that of effective historical consciousness. Effective historical consciousness cannot be thought of as a form of objective knowledge. It is meant to capture the past precisely in terms of its effectivity on the present, its effectivity even upon the very way in which it is known. It is the past as seen from the specificity of the perspective of the present. It makes no claims to capture what the past is like "objectively," that is, abstracted out of its relevance for the present. Importantly, rather than disinterested representation of the past, effective historical consciousness is the type of knowledge conceived as practically relevant. It is knowledge relevant to its ability to meet certain specific demands of the present.

We might start to see the parallels here between Gadamer's notion of effective historical consciousness and the psychoanalytic interpretation of the unconscious, archaic self. In both cases, a subject in the present must reestablish a connection with something earlier which is a condition of its own existence: belonging to a historical tradition with its ways of interpreting the world on the one hand and having an archaic mentality with its primitive forms of libidinal investment in the world on the other.

This re-establishment of a connection is a bringing to consciousness, an active remembering, and, in both there will be the danger of over-objectification. In each case what is at risk is the sense of how that which is understood enters into the constitution of one's identity. In the case of history, over objectification will result in my not be open to the "claims" of that tradition which provides the conditions of my cognitive life. In the case of personal psychology the equivalent danger is that I will not be open to the nature of those basic libidinal investments in the world which are the roots of the various forms of meaningfulness that the world *now* has for me. The psychological equivalent to the historical acknowledgement of the normativity of one's cultural heritage will be the experience of the emotional pull of some remembered object—that "affect" without which for Freud, "recollection ... almost invariably produces no result."

In neither situation is it the case that to acknowledge the claims of one's identity constituting past means to submit or subject oneself to them. To the contrary, this is the acknowledgment of something whose effects one would have otherwise undergone in a totally passive and unconscious way. Furthermore, acknowledgement necessarily involves a putting the past into words, a bringing it to the level of representation, because acknowledging is an intentional act which requires an object. This means that the acknowledged past now becomes able to be dealt with by being assimilated into the fabric of conscious psychological life. What this actually means might be elucidated if we reflect on the Aristotelian theory of the phenomenon on which Freud modelled the psychoanalytic cure: catharsis.

In *Love and its Place in Nature*, Jonathan Lear has explored the notion of catharsis in psychoanalysis in terms of the idea of "coming to take responsibility for" those archaic desires inherited in their frozen form from earlier stages of one's psychological life.⁹ Lear refers to a passage in which Freud wrote of the necessity to accept responsibility for the sorts of evil impulses that find expression in dreams. This sounds odd because, if Freud is right, these preserved archaic desires are more like natural phenomena than something "willed". How can one *be* responsible for something which was not willed in the first place?

Lear likens this situation to the "guilt" assumed by the heroes of ancient tragedy for actions that were fated all along. Oedipus takes responsibility for his acts of parricide and incest even though he *could not* have willed them under those descriptions. To have willed these actions he would have had to *know* that Laius was his father and Jocasta his mother. Lear sees Oedipus as effectively saying "whatever the god's ordained ... the fact is *that I did it*." It looks like Oedipus is trying to retroactively projecting his will back into actions which have already happened, as it were, on their own account. This sounds something like what Nietzsche described as in his characteristically perverse way as "willing backwards". Lear describes

it as Oedipus "claiming a part of nature for himself."¹⁰

Likewise the analysand claims a part of nature for himself by acknowledging the archaic wishes at the heart of the unconscious. This acknowledgement involves putting them into words, for one cannot will something unless it is captured by some representation. But this putting the wish into words is what allows it now to become incorporated into and evaluated and dealt with from within the fabric of one's beliefs, desires and values. This is precisely what could *not* occur when the "desire" remained in its archaic state. Thus establishing a retrospective connection between one's will and one's archaic desires is not to "hold oneself responsible for them", that would have implied that one "willed them *then* in the way one is willing them now. Rather it is the means of taking over responsibility for them. Who else is going to be responsible for them if not the person themselves.

We might see Gadamer's concept of effective historical consciousness in this way as well. Gadamer has been criticized for the apparent conservatism of his position on the relation of self to tradition. But seen as the act of assuming responsibility for one's cultural tradition this act of appropriation is just as little a matter of subjecting oneself to that tradition as assuming responsibility for one's archaic desires is subjecting oneself to those desires. In order to appropriate one's heritage, to retrospectively bring it under one's will, one needs to raise it to the level of representation, and this is what allows one's critical evaluations to bear on it. We might say that criticism without affirmation is empty, just as affirmation without criticism is blind.

Gadamer also turns to the model of ancient tragedy to capture something of the nature of the hermeneutic consciousness of effective history. In succumbing to fate the hero provides a figure within which the spectator can "recognize himself and his own finiteness in face of the power of fate."¹¹ What the tragedy does is establish an appropriate distance from events which allows them to be acknowledged in the terror and pity of the cathartic response. What distress and horror always threatens is a divi-

sion of the subject from those events. Gadamer could be talking about repression when he describes this division as a "refusal to accept, that rebels against the agonizing events."¹² The spectator's tragic recognition of himself in the hero as well as his recognition of the necessity of the hero's fate, a recognition bound up with the experience of the tragic emotions, avoids or overcomes this threatening division within the self and between self and the world:

the emotion that seizes the spectator deepens ... his continuity with himself. The tragic emotions flows from the self-knowledge that the spectator acquires. He finds himself in the tragic action because it his own world, familiar to him from religion or historical tradition, that he encounters.¹³

Both psychoanalysis and ancient tragedy are cultural forms in which a continuity of one's existence in time can be recovered within the flux of natural existence. They are contexts within which there is a goal of a type of self fashioning which does justice to both one's freedom from determination by what is other than the self, nature and history, *and* one's belonging to the same nature and history.

Concluding Thoughts

Thought of according to these sorts of models, hermeneutic self-understanding is a type of knowledge which is distant from that modelled on the natural sciences. It attempts to break with those dichotomies of western culture—mind/world, culture/nature, value/fact, knower/known—which when applied to ourselves individually or collectively seem always to result in an impasse of self-alienation. On the hermeneutic model, the achievement of knowledge of the self cannot be the achievement of the knowledge of something which already exists, independently, as it were, of the process of coming to know. It is not the achievement of knowledge of "an object" at all—not so much the achievement of knowledge of something called the self (or collectively "us")—as a knowledge of the world seen from the perspective of a part of it—

that part which we "occupy." Rather than aiming at some narcissistic gazing at one's own image, it aims at an account of the world—of nature or of history—as it *bears on* the self. Rather than aiming at the achievement of some (illusory) technical power over something—nature, history, one-self—it aims at an ability to go on *in* the world—at the maintenance, creation of a certain type of life *within* nature and history.

Notes

1 Adolf Grünbaum, "The Foundations of Psychoanalysis: A Philosophical Critique," (Univ. of California Press, Berkeley, 1984).

2 Josef Breuer and Sigmund Freud, "On the Psychical Mechanism of Hysterical Phenomena: Preliminary Communication" in J. Strachey (ed. and trans.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Hogarth Press, London, 1953 - 74), vol. 2, p. 7. Further references given in the text as "S. E." followed by volume and page numbers.

3 Trans. J. Shapiro, (Beacon Press, Boston, 1971).

4 Wilhelm von Humboldt, "The Task of the Historian", in K. Mueller-Vollmer (ed.), *The Hermeneutics Reader*, (Blackwell, Oxford, 1986), p. 108.

5 *Ibid.*

6 cf., Wilhelm Dilthey, *Selected Writings*, trans and ed. H. P. Rickman, (Cambridge University Press, London, 1976).

7 The case was that of Fräuline Elisabeth von R.

8 Hans-Georg Gadamer, *Truth and Method*, (Sheed and Ward, London, 1975)

9 Jonathan Lear, *Love and its Place in Nature*, (Farrar, Straus and Giroux, New York, 1990)

10 *Ibid.*, p. 171.

11 Gadamer, *Truth and Method*, p. 117.

12 *Ibid.*, p. 116.

13 *Ibid.*, p. 117.

Mathematical Hermeneutics

Mathematics is the language of science. As such, it is sometimes shunned by practitioners of the human sciences as exemplifying the kind of narrow rationalism against which they militate. Yet mathematics is an old language, pre-dating science, positivism, and rationalism. On inspection, it yields clear and beautiful examples of the hermeneutic process. It offers a way of bridging the conceptual gulf between the objectivist language of science and the hermeneutical language of the humanities.

David Week

Pacific Architecture
Glebe Sydney

Crossing the Great Divide

The purpose of my investigation is not to offer a general theory of interpretation and a differential account of its methods ... but to discover what is common to all modes of understanding.¹

Gadamer promises more than another defence of the human sciences against the encroaching objectivist methodologies of the natural sciences; he promises an interpretation of human understanding that does not discriminate between the two cultures.²

Nonetheless, we see Gadamer's work appropriated primarily by the humanities: by philosophers, sociologists, architects, and psychologists. We do not see the language of philosophical hermeneutics appearing in the writings of chemists, physicists or mathematicians.

This is, I think, a problem. The Cartesian schism against which Gadamer militates is not just an academic one. It is a division that splits our society into scientists and artists, thinkers and feelers, theoreticians and practitioners, and our personal world pictures into physical and mental, real and imaginary, objective and subjective. As creatures of our culture, we cannot completely heal our personal world unless we also heal our social world. In such a world made whole, the gap between poet and physicist is no greater and no different in kind

than the gap between physicist and chemist. In such a world, artists and mathematicians, historians and physicists, poets and chemists, can speak a common language.

This seems like a wild idea. That it seems wild is itself a sign that we are still held in the grip of the Cartesian division of the world.

Mathematics may be the key to relaxing this grip. The language of mathematics is so intertwined with that of the natural sciences, that if mathematical understanding can be shown to be open to the language of hermeneutics, then all the natural sciences follow.

This paper embarks on this project by looking at several key hermeneutical concepts within the perspective of mathematical examples. These concepts are:

- dialogue
- metaphor
- embodiment
- fusion of horizons
- the construction of reality

In doing so, it seeks to serve two aims:

- to make basic concepts of hermeneutics accessible to people trained in the objectivist disciplines, by defining them through examples understood within those disciplines
- to turn the attention of the humanities-based participants in the

hermeneutical debate towards the hermeneutics of mathematics

In taking this tack, I expect more than just the undermining of the objectivist account of mathematics.³ I expect that the language of hermeneutics will also be illuminated by this encounter. This expectation is given by hermeneutics itself:

The application of a schema already understood, a prejudice already in place, to yet another instance does not further understanding at all. ... On the contrary, in hermeneutic experience, Gadamer writes, 'both things change—our knowledge and its object'.... The interpreter's horizon does not remain unaltered...⁴

It is in bringing the horizon of hermeneutics to a strange text, to a text at first sight both alien and opaque, that we can expect the most productive expansion of that horizon.

So far, this expectation has been borne out. As I hope will be apparent in this paper, mathematics offers very lucid, very illuminating, and perhaps even exemplary material through which to develop our understanding of central hermeneutical concepts.

Concepts of Number

We begin with a look at the concept of number. This section serves to recount a few basic concepts of number,

which will be used later as examples.

Historically, the concept of number has not remained static. Some of the concepts of number, in order of their historical appearance:⁵

- the natural numbers
- the integers
- the rational numbers
- the real numbers
- the complex numbers

This list is not exhaustive. There are notions of number more abstract than the complex numbers.⁶ There are also more primitive concepts of number than the natural numbers.⁷ The list above will serve the purpose of this study.

We begin with the natural numbers. These are the numbers:

0 1 2 3 4 5 6 7 8 ...

These numbers, with addition, form a closed system.⁸ In other words, any two natural numbers, when added, give another natural number.

Addition is an extension of the concept of counting. We can understand the operation of addition as first counting, then—starting at the place we have reached—counting again. 6 + 5 is to count to six, and then—starting at 6—to count to five, leading to the same result as counting to 11.

It is possible to extend the concepts of addition further, in an apparently innocuous way, by introducing subtraction. Subtraction is simply the inverse of addition. Once we allow subtraction, however, we are forcibly led to redefine our concept of number.

...some important operations may take us outside the realm of the natural numbers—the simplest being subtraction.⁹

It is possible within the language given by the natural numbers, addition and subtraction, to pose questions that are not answerable within the system.

For instance:

1 minus 7
2 minus 3999

In order to allow these questions to be answered, we have to change our concept of number, “we need negative

numbers; we can set out the whole system of integers.”¹⁰

... -4 -3 -2 -1 0 1 2 3 4 ...

This is a new concept of number. We have new entities, negative numbers, that have no meaning within the old concept of the natural numbers.

Again, working within the concepts employed, we can make simple, and apparently innocuous extensions to our system. We can extend the concept of addition by defining multiplication as multiple addition, and division as the inverse of multiplication.

Once we allow division into our language, the integers are no longer closed. We can pose questions that again cannot be answered within the concept of number given by the integers.

If we assume that division (except by zero) ... [is] always possible, we are led inevitably ... to the system of rational numbers.¹¹

The rational numbers are all numbers that can be expressed as a fraction (as a ratio). For example:

0/4 555/2 12/1 1/7 4/5

But by allowing infinite sequences, we can again pose questions that have no answer within the domain of the rational numbers. For instance:

$$\pi = 2 \{(2/1)(2/3)(4/3)(4/5)(6/5)(6/7)...\}$$

...The number system needs to be extended so that such quantities can be included.¹²

This new concept of number reached by such extension is the system of real numbers. The real numbers are any number that can be represented by an infinite decimal expansion, such as:

1.222222222222222222222222...
434231.000000000000000000...
2.156345555347774520349485...

Again, within this concept of number, questions can be formulated that require a shift to yet another new concept of number, that of the complex numbers.

The beginnings of an appreciation of complex numbers came about with the work of Gerolamo Cardano... [who] wrote an important and influential treatise on algebra ‘Ars Magna’ in 1545. In this he put forward the first complete expression for the solution of a general cubic equation. He had noticed, however, that in a certain class of cases ... he was forced to take, at a certain stage in his expression, *the square root of a negative number.*” [The square root of a negative number lacks an interpretation in the real numbers.] “Although this was puzzling to him, he realised that if he allowed himself to *take* such square roots, and *only* if, then he could express the full answer.¹³

Question and Answer The Hermeneutic Circle

Central to philosophical hermeneutics is the notion of the hermeneutic circle: that understanding proceeds through a dialogical basis of question and answer, in which the reader projects an understanding onto the text, which then in turn poses new questions to the reader.

We can see this circle at work in the development of the concept of number.

In each of the cases discussed above, in each shift of the concept of number, questions are developed that can be posed within the existing mathematical language, that cannot be answered within that language. To answer the questions thus posed requires a shift in both our interpretation of the language, and in the structure of the language. Again:

both things change—our knowledge and its object¹⁴

For instance, within the natural numbers, addition, and subtraction, we find ourselves able to create linguistic structures that have no meaning within the mathematical system within which we are operating. To give these structures meaning, we change the nature of that system.¹⁵

Metaphor

Each step of the development of the concept of number also involves looking at number through a new metaphor for number. Each conceptual shift is a metaphorical shift.

To employ a metaphor is to see one thing *as* another.¹⁶

We conceive of the natural numbers as a sequence; as a series of objects with a beginning, and then one following the next, and so on. We understand the natural numbers in terms of counting, in terms of activities and games we learn as children.

0 • • • ...

When we move to the concept of the integers, we extend this sequence infinitely in both directions. We have the following schema:

... • • • 0 • • • ...

In going from the integers to the rationals, and the reals, we replace the discrete line of objects with a continuum...

←————— 0 —————→

Finally, for the complex numbers, with the complex plane (on which the Mandelbrot set is mapped.)

There is nothing implicit in our experiences of counting, or one-to-one correspondence, or addition and subtraction, that implies these spatial conceptions of a number. The act of spatialising number is an act of metaphorical projection: an act in which we map one domain of experience (one-to-one correspondence among objects; counting) onto another (lines, and sequences of objects.)

It would be more illuminating ... to say that the metaphor creates the similarity than to say that it formulates some similarity antecedently existing.¹⁷

Such diagrams often illustrate mathematical textbooks. They are used in the teaching of mathematics. According to formal interpretations of mathematics, they are meaningless, since

mathematics is mathematical logic—symbol manipulation.¹⁸ According to some teachers of mathematics, they are essential.¹⁹

These spatial conceptions of number are metaphorical, and metaphor-structures define the structure of our thought. They point to what Gadamer calls 'the fundamental metaphoricity of language'.²⁰

Mathematical concepts, like natural language concepts, are open to multiple interpretations. All of the metaphor structures mentioned above (as well as many others) are still in use today in structuring the concept of number. Which metaphor is used depends upon the task to which the concepts are being applied.

I will argue later that it is this very richness of interpretation that gives mathematics the power it has.

Metaphor-Shift

We can also see at work here notions, introduced by Thomas Kuhn,²¹ of how such conceptual shifts take place.

According to Kuhn, the development of a discipline takes place within a particular world-view, or paradigm, and is characterised by long periods of "normal" activity during which research proceeds within the received metaphors. During such periods, evidence that does not fit into the current paradigm is simply ignored. However, sometimes such anomalies cannot be glossed over, a crisis occurs, and there is a massive shift of paradigm, and the creation of a new scientific theory.

For instance, prior to the development of the concept of the complex numbers, the mathematical language of the reals simply disallowed the taking of the square root of a negative number. It was possible to formulate such a notion in the text of the language, but since the metaphor (of the number line) provides no interpretation for such a text, it was declared meaningless.²²

In the work of Cardano, described above, and later Raphel Bombelli²³ it became evident that allowing oneself to take the square root of a negative number was necessary to solve what were considered important problems

in mathematics—finding the roots of equations. Since it was no longer tolerable to have such root-taking disallowed, or considered meaningless, a new concept of number—with a new spatial metaphor: the complex plane—was invented. This invention was accompanied by a period of intense productivity, during which the properties of this new concept were elucidated.

Metaphor in Proof

Metaphor also plays a key role in mathematical proof. Two historically important proofs are Cantor's proof by the diagonal method that the real numbers form a larger transfinite set than the natural numbers, and Turing's Theorem on the halting problems.

The bones of Cantor's proof are as follows:²⁴

- Cantor had previously shown that there could be no transfinite set smaller than the natural numbers
- If the set of reals were of the same size as the set of natural numbers, then it would be possible to establish a one-to-one correspondence between the two sets.
- Imagine that you had established such a correspondence. Then you would have a list of the real numbers: the first on the list being mapped to 0, the second to 1, the third to 2, and so forth.

Cantor then showed how to construct a new real, not already on the list.

- Take the first digit of the first number, the second digit of the second number, and so forth. This would give you a new number, different from the first number in the first place, from the second number in the second place, and so forth. It would therefore be a real number not already in the list.
- The one-to-one correspondence has failed, and therefore the set of reals is larger than the set of natural numbers.

Cantor's main results derive from his deployment of a new metaphorical

mapping. His diagonal method,²⁵ mapped the real numbers onto a matrix. It took numbers and interpreted them as strings of symbols. Later, it reinterpreted these strings of symbols as a new number.

This reinterpretation is the heart of Cantor's diagonal argument.

Turing's Theorem also involves such a reinterpretation. In the course of the proof, he maps all possible Turing machines onto the natural numbers. He then reinterpreted the resulting series of natural numbers, as a Turing machine input.

This establishment of a map between the mathematics of computation, and the mathematics of the arithmetic, linked Turing's work with Gödel's, and established a permanent bridge between the two domains. Thereafter, it became possible at any time to reinterpret a Turing machine as a number, and therefore bring to it tools developed in other domains of mathematics, and vice versa.

The establishment of such a bridge thus permitted a tremendous cross-pollination of work, and resulting flurry of mathematical productivity.

Foundations

It might be argued that metaphors may be part of the psychology of mathematical learning and discovery, and might be important rhetorical aids to discourse on mathematics, but they are not foundational. Further: that there is a deep, precise, structure to mathematics, which all of these aids attempt to represent, albeit imperfectly. The deepest representation discovered so far is mathematical logic, or set theory.

In the first place, this entire conception of mathematics as having deep and shallow aspects, as having foundations, is a metaphorical projection of our experience of up and down, and the way objects are supported one atop another on the surface of the earth.

How is set theory metaphorical?

It is axiomatic in set theory that if A is a subset of B and B is a subset of C, then A is a subset of C.

Why?

The answer that has been formulated by George Lakoff,²⁶ drawing on the work of mathematician Saunders Mac Lane and philosopher Mark

Johnson,²⁷ is that set theory is a metaphorical extension of our experience with containers.

In our daily experience, if A contains B, and B contains C, then A contains C. Set theory is built on our experience in this domain.

Similarly, the very belief that mathematics *needs* stable foundations is drawn from our bodily experience that without a stable footing, we ourselves are in danger. We talk of the *foundations* of mathematics precisely because we are deploying this metaphor.

Containers, foundations, and stability are aspects of the experience given to us by the biological structure of our bodies. It is edge-detection in the visual system, the kinesthetic sense, and the balance organs of the inner ear that create the experiential world of which containers, foundations, and stability are a part. With a different biology, we would have a very different experience of the world. We would have—in fact—a very different world.

In this view, mathematics, far from being an abstract, transcendental realm, arises from the biological structure of our perception. This addresses a questions raised by Mac Lane: why is the mathematical universe subdivided the way it is—into geometry, topology, algebra, set theory, and so forth. What Mac Lane calls the "grand set-theoretic foundation" provides no answer. Mac Lane's answer is that

The real nature of these structures does not lie in their often artificial construction from set theory, but in their relation to simple mathematical ideas or to basic human activities... mathematics is not the study of intangible Platonic worlds, but of tangible formal systems which have arisen from real human activities.²⁸

Arithmetic and number theory from counting; real numbers, calculus, and analysis from measuring; topology from the shaping of plastic bodies; logic from rhetoric; set theory and combinatorics from grouping, and so forth.

This dependence of conceptual reality on the social experience, and on structure of the body is also pursued by Maturana,²⁹ who argues that all

biological organisms create their own realities.

Mathematical Reality

What is the nature of mathematical reality?

So contrary to common sense did the taking of square roots appear at the time of Cardano, that the square roots of negative numbers were termed "imaginary"—a term that is still with us today.

Now, this term is just a quaint historicism. The complex numbers are regarded as having no greater nor lesser claim to reality than any other numbers, including the "real" numbers. In fact many mathematicians—Penrose among them—consider numbers to have an objective reality, independent of human beings.

Later we find many other properties that these complex numbers possess, properties that we had no inkling about at first. These properties are just *there*. They were not put there by Cardano, nor by Bombelli, nor Wallis, nor Coates, nor Euler, nor Wessel, nor Gauss ... properties that go under various names, such as the Cauchy integral formula, the Riemann mapping theorem, the Lewy extension property. These, and many other remarkable facts, are properties of the very numbers ...³⁰

Penrose believes that mathematicians are "really uncovering truths which are, in fact, already 'there'—truths whose existence is quite independent of the mathematicians' activities."³¹

A more moderate view is held by the transcendental number theorist Rob Tubbs:

Q: Do mathematical objects exist out there, or are they merely human creations?

Tubbs: Well, the integers probably pre-exist in some sense. And the fraction too... But basically I think mathematics is mostly a human creation, so I guess I'm sort of a semi-Platonist.³²

Such views of the reality of number (and of mathematics in general) are

disputed by the constructivist mathematicians.

One point not in dispute is that the system in which the contemporary mathematician operates is, indeed, a belief system. ... Moreover, we know from the mathematician's own account that he is deeply attached to this particular way of seeing mathematics, and that he has no experience of seeing it any other way, and that he belongs to a community of fellow practitioners who participate with him in the experience of seeing it this way. ... The contemporary mathematician is very impressed by the 'reality' of his mathematical experience; and the fact that it is a shared experience—shared by a world community of mathematicians—greatly reinforces his belief in its 'objectivity'.³³

We can understand the experience of both the Platonist Penrose and the constructivist Stolzenberg within the horizon of post-objective hermeneutics.

Stolzenberg is pointing to the experience that mathematics changes through history. Before the invention of some mathematical 'objects' like the complex numbers, not only were they not 'there', but they seemed impossible, and contrary to common sense. Cantor's work is today considered seminal. In his time, both he and his mathematic were branded insane.

Penrose is pointing to the experience that, once created, mathematical 'objects' acquire their own dynamic. They are not arbitrary, not subject to our will. We cannot control or foresee the direction our dialogue with them will take.

Hermeneutics understands 'reality' to be the outcome of a dialogue rather than a pre-existing, separate thing. This understanding is nicely encapsulated in the title of a paper by Maturana: "Reality: The Search for Objectivity or the Quest for a Compelling Argument."³⁴ Feyerabend summarises the way in which this dialogue can be conditioned—though not determined³⁵—thus:

Assume that the world—or, to use a more general term, Being, reacts to the way in which you behave, or

in which a whole tradition behaves, that it reacts differently to different approaches and that there is no way of connecting the reactions with a universal substance or with universal laws. Assume also that Being reacts positively, ie life-sustaining and truth-confirming to more than one approach, then all we can say it that, *approached scientifically*, Being gives us, one after another, a closed world, an eternal and infinite universe, a big bang, a great wall of galaxies ... and that *approached 'spiritually'* [or mathematically], it gives us gods [or numbers], not just ideas of them, but real visible gods whose actions can be followed in detail—and life is sustained in all these circumstances. Well, in such a world you cannot say that the gods [or numbers] are illusions—they are really there, though not absolutely, but in response to certain kinds of actions...³⁶

Reality is constructed through the working out of the hermeneutic circle. The direction that the dialogue takes is constrained. Some avenues of questioning meet resistance—they just don't work.³⁷ However, the outcome of the dialogue is something that did not exist prior, and is not foreseeable.

In the construction of mathematical reality, we can see the act of construction at work. New constructions—being new metaphors—dazzle us with their brilliance. With time, they become so absorbed into our world-view, that we accept them as commonplace.

[I A Richards] suggested that our reality is a 'projected world' and that 'the processes of metaphor in language ... are superimposed upon a perceived world which is itself a product of earlier or unwitting metaphor.'³⁸

We also see this process of the absorption and literalisation of metaphor, in the development of the concept of number, in which old concepts become reinterpreted through new metaphors. The natural numbers become reinterpreted as a subset of the integers, the integers as a subset of the

rationals, and the rationals as a subset of the reals.

We saw in the section on proofs, how major developments in mathematics involved the creation of new metaphoric links between existing domains.

Conclusions The structure of the World

The world that is constructed in this way is a world rich in metaphoric interconnections. These bridges allow one to traverse mathematical reality without interference. It is because the metaphors of mathematics have become so richly interlinked, that we can walk effortlessly from metaphor to metaphor without breakdown.

It is this richness of metaphorical linkage that makes mathematics palpably real, and powerful in practice.

It is this oneness of the world that arises from the process of fusion of horizons, in which separate domains become one.

Mathematics provides a rich field for exploring concepts of hermeneutics. The language of mathematics is simpler than the complex natural languages like English, and so it allows us to see examples of metaphor and interpretation in a clear and simple light. Compared to a natural-language category like "house", which may be both source and target of thousands of metaphor-structures, the accepted metaphors for a mathematical concept like number are relatively few. Similarly, the grammar of mathematics is well-known and understood.

Mathematics is a language, and as such it brings into being a reality. It is metaphorically structured, and that structure is conditioned—though not determined—by our biological structure as living organisms.

Sometimes, the reality of that world breaks down. It will not serve the task at hand. At such times, mathematical concepts become redefined, metaphors and paradigms shift, and we come to a new horizon. At other times, major new bridges are built between existing parts of the world, and the new juxtapositions thus created give rise to a wealth of new mathematics.

When the web of metaphor that constitutes mathematics is seamless, when we don't encounter its edges or the domains in which it breaks down, then we come to accept it, and see it as real. Worlds become real to us when we find no cause to question them.

Notes

1 Hans-Georg Gadamer, *Truth and Method*, rev. transl. by Joel Weinsheimer and Donald Marshall, Seabury Press, New York 1989, p.xxxi.

2 Gadamer is not alone in working towards such a seamless world view. The scope of this movement has been surveyed by Richard Bernstein, *Beyond Objectivism and Relativism*, Basil Blackwell, Oxford, 1983.

3 ... already problematic, in that it is not clear that objectivism offers any account of mathematical 'reality', other than by positing a bizarre Platonist other-world. In a post-objectivist world-view, mathematical realities have the same status as any other realities—they are all human constructs.

4 Joel Weinsheimer, *Philosophical Hermeneutics and Literary Theory*, Yale University Press, New Haven, 1991, p.84. Weinsheimer is quoting Gadamer, *Truth and Method*, p.354.

5 This follows the account of number given by Roger Penrose, *The Emperor's New Mind*, Oxford University Press, Oxford, 1989, Vintage edition, 1990, pp.105ff. A similar account is given in George Birkhoff, "Number", *Encyclopedia Britannica*, William Benton, Chicago, 1966, Vol 16, pp.738ff. It may be argued that I depend too much here on non-technical accounts of number, such as these by Penrose and Birkhoff, and that *real* concepts of number are defined formally, as for instance by the Peano postulates for arithmetic. I would reply that: (a) There is no doubt that Penrose and Birkhoff are exemplary mathematicians, (b) the metaphors they employ to structure the concept of number are therefore metaphors mathematicians themselves employ in thinking and talking about number, and (c) formal systems are themselves just webs of metaphor, in terms of which earlier metaphor-systems are retroactively redefined. These arguments are taken up in detail later.

6 Such as algebraic and transcendental numbers—which represent another way of subdividing the reals—and fields and transfinite numbers—which represent radically different concepts of number.

7 ... such as the natural numbers without zero, zero being a relatively recent and abstract invention (the Romans didn't have it) and finite concepts of number, found in languages which have a finite counting system (for example: one, two, three, many).

8 This is true as long as we restrict ourselves to finite sentences.

9 Penrose, *idem*, p.105.

10 *Ibid.*

11 Birkhoff, *idem*, p.740.

12 Penrose, *idem* p.106. The italics are his.

13 Penrose, *idem* p.125. The italics are again his.

14 Weinsheimer, *ibid*, quoting Gadamer, *Truth and Method*, p.354.

15 So it is in English too. For instance, English treats all nouns similarly, as if they were objects—things like coffee cups, telephone books, and so forth. "I" and "self" and "mind" are nouns, and therefore we are led to questions like: where is the "I"? Where is the seat of the self? Where is the mind?—questions we might normally ask of coffee cups and telephone books. When we can find no answer to such questions, we are forced to shift our concept of language. In this case, away from our folk theory of meaning as correspondence, which gives rise to such unanswerable questions, to Gilbert Ryle's description of such questions as 'category errors', and to Wittgenstein's metaphor of language as a game, without correspondence.

16 George Lakoff and Mark Johnson, *Metaphors We Live By*, University of Chicago Press, Chicago, 1980.

17 Max Black, "Metaphor", *Proceedings of the Aristotelian Society*, n.s. 55 (1954–1955), pp.273–285. Attention to this quote was drawn by Mark Johnson, *The Body in the Mind*, University of Chicago Press, Chicago, 1989, p.69.

18 Itself a metaphor which interprets mathematical language as strings of objects.

19 See for instance Richard Skemp, *The Psychology of Learning Mathematics*, Penguin, London 1971, *passim*, or any mathematics textbook employing the "number line."

20 quoted in Weinsheimer, *idem*, p.65. On the same theme: Paul Ricoeur, *The Rule of Metaphor*, trans. Robert Czerny et al., University of Toronto Press, Toronto 1977, George Lakoff and Mark Johnson, *Metaphors We Live By*, University of Chicago Press, Chicago, 1980; George Lakoff, *Women Fire and Dangerous Things*, University of Chicago Press, Chicago, 1987; Mark Johnson, *The Body in the Mind*, University of Chicago Press, Chicago, 1989.

21 Thomas Kuhn, *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago, 1962.

22 Much as division by zero is still declared meaningless today, and disallowed.

23 Penrose, *ibid*. p.125.

24 from J. N. Crossley and Others, *What is Mathematical Logic?* Oxford University Press, Oxford, 1972, p.4.

25 The term itself is overtly metaphorical.

26 George Lakoff, *Women, Fire and Dangerous Things*, University of Chicago Press, Chicago, 1987, pp.353–369.

27 Mark Johnson, *ibid*.

28 Mac Lane cited by Lakoff, p.361.

29 Humberto Maturana and Francisco Varela, *Autopoiesis and Cognition: The Realization of the Living*, Reidel, Dordrecht, 1980.

30 Penrose, *ibid*, p.125–126.

31 *Idem.*

32 Rob Tubbs interviewed at the Institute for Advanced Study by Ed Regis, *Who Got Einstein's Office?*, Addison-Wesley, Reading, 1987, p.85.

33 Gabriel Stolzenberg, "Can an Inquiry into the Foundations of Mathematics Tell Us Anything Interesting About Mind", in Paul Watzlawick, ed., *The Invented Reality*, Norton, New York, 1984, p.272.

34 Humberto Maturana, "Reality: The Search for Objectivity or the Quest for a Compelling Argument", *The Irish Journal of Psychology*, 1988, 9, 1, pp.25–82.

35 A distinction elaborated by Richard Rorty, "The Contingency of Language", *Contingency, Irony, and Solidarity*, Cambridge University Press, Cambridge, 1989.

36 Paul Feyerabend, *Three Dialogues on Knowledge*, Basil Blackwell, Oxford 1991, pp.42–43.

37 Hermeneutical thinking is here consistent with Darwinism, a point also raised by Rorty, *ibid*.

38 Mark Johnson, *The Body in the Mind*, University of Chicago Press, Chicago, 1989, p.69, quoting I.A. Richards, *The Philosophy of Rhetoric*, Oxford University Press, Oxford, 1936, pp.108–109.

The Practice of Science

The Research-Development Relationship with Particular Reference to Agriculture

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Uncertainty about **funding**; difficulty in determining **research priorities**; and concern about **technology transfer** (the lack of application of research results): these words stand out in the language of scientific/industrial research and development, today. So-called technology transfer seems to be the central issue because the criteria for determining research priorities and funding decisions are mostly based on the expected "pay off," *i.e.* the economic benefits which will result from the research findings **being put into use** within the industry. This applies, not only in situations where the industry is providing a proportion of the funding, as in most agricultural research, but to scientific research generally which is intended for the "public good."

Why is the practice of science (research and development, rather than teaching), which is intended for our industrial and community progress, subject to these concerns and what is being done to address them? One response has been to treat technology transfer as a problem requiring research, but this utilises the very same scientific methodology which appears to be letting us down. The demarcation which exists between the physical sciences and the social sciences, or between research and extension (in agriculture), also complicates the situation.

The contextual philosophy of Gadamer and Heidegger and the bi-

ology of cognition portrayed by Maturana and Varela could be of assistance in addressing these issues. We claim that it is necessary to examine the fundamental nature of the research and development (or extension) process in order to make a coherent explanation of the kinds of action which are occurring and to propose alternative kinds of action.

To do this we will examine the traditional operation of scientific research and development (R&D), then draw on the language of contextual philosophy and science to take another look at what scientists actually do, provide an example of a non-traditional R&D project which is in progress and, in conclusion, list what we consider to be the key elements of the conversation which will produce some different kinds of actions and consequences in the context of R&D management.

The Changing Traditions of R&D

Russell and Ison (1991) drew a distinction between **first-order R&D**, in which the researcher remains outside the system being studied, treating it as an objective reality which is independent of the researcher's actions, and **second-order R&D** whereby the researcher and the topic being studied are inextricably linked within the higher-order system. Although the language of theoretical physics has engendered a certain amount of lip service to the idea of observer-

participancy, the practice of science is characterised by the simpler first-order approach and this important epistemological distinction tends to be regarded either as trivial or too messy to address properly.

Thus we have what Winograd and Flores (1987) called a **rationalistic** tradition which has developed through the progress of science since the Enlightenment with the implicit belief that we can eventually reduce everything in the world to definable objects and properties to which certain rules apply. This increasingly knowable world is therefore essentially controllable, the only limitation being the extent of our knowledge. Where we see "problems" in our experience in the world we can **analyse** the situation and find "solutions" by a rational process. We can even take into account how these solutions affect the quality of our lives by adding a social science to the rational process of discovery. It is more traditional to analyse our situation than to **design** our future because we do not care to take into account the idea that the way we see the world could determine what we do in the world, and what we do could determine how we see the world.

The contrast between analysis and design has also been pursued by de Bono (1991). Without the process of analysis most of our achievements in R&D would never have occurred, because we have needed to identify the individual parts and their rela-

tionships in great detail in order to gain some measure of control, but there are some difficulties. Analysis applies to closed systems, so we have to assume that we are dealing with closed systems and make decisions about where to draw the line around the system in question. Our tradition has it that the answers lie in the analysis of data and, for practical purposes, we can ignore the thought that this analysis might not be objective, but might depend on our perceptual framework which tends to consist of rather simplistic models such as correlations, time courses and linear cause and effect.

That the traditions of our R&D have great practical benefit and are workable we would not deny, but we are concerned that there is a crisis of confidence in science arising from what are seen as its undesirable side effects and its failure to "fix" some pressing human problems. Nor would we wish to disparage rationality because we regard our ability to make scientific explanations as, not the only means, but one important means, of designing a better world. What we seek is to enlarge the scope of rational action in science—a commitment similar to that expressed by Winograd and Flores (1987) as a "new foundation for design." Design has to do with what our action generates and how this series of inventions influences our future action. It is only beginning to emerge in our R&D tradition.

We see the first step as recognising the influence of our tradition. Every understanding arises out of a tradition which is a network of prejudices, or pre-understanding, that opens the space of possibilities for that understanding. This tradition is the background against which we interpret and act, largely unaware of the historicity of our thinking. Our main concern, which will be addressed in more detail, is that the insights which arise from our tradition also constitute our blindness, not primarily because our knowledge is incomplete, but because of the very nature of our process of understanding. This has important implications for research methodology and also for the managerial decision-making process which is entailed in influencing the

direction of research and the practical application of research results.

The most important and, we believe, pernicious, aspect of our current scientific tradition is its reliance on the information-processing paradigm which has it that the objects and properties of the real world can be represented as bits of information which can be processed and transferred from one person to another as the principal currency of science and most human endeavour. This idea is comparatively recent, dating from about the time of Shannon and Weaver (1949), but it is thoroughly entrenched. It is embroiled in our attempts at understanding two of the biggest issues in scientific R&D today: the use of computers (artificial intelligence, expert systems and decision support systems) and the process of cognition (how do we know about things and communicate this knowledge?).

The emerging intellectual praxis which is known as Social Ecology (Russell, 1991) espouses the contextual science model which is the counterpoint to information processing, *i.e.* Maturana and Varela's biology of cognition. Social Ecology, which is placed at the cutting edge of changing scientific traditions, deliberately links this with a major tenet of contextual philosophy that practical experience is primary and to be valued above theoretical understanding, being the more fundamental kind of knowledge. Western tradition tends to present theory as clear and experience as cloudy, but we maintain that we do not relate to things primarily through having representations of them; our primary access to the world is in acting without an awareness of the state of our moment-to-moment reflection.

Some Pointers from Philosophy

The hermeneutic philosophy of Gadamer (1975; 1976) and Heidegger (1962), even viewed indirectly through the writing of Winograd and Flores (1987), appeals to us as a significant guide to understanding what is happening with R&D in science. Hermeneutics deals with the interpretation of language, where every reading or hearing is taken to be an act

of giving a meaning to the words which is essentially context-dependent. Thus the language we use is that which we have learned to interpret through tradition and we make progress in changing our ways as we change our use of language. Meaning is fundamentally social and based in the action which arises in our language.

The notion of human cognition has been re-orientated in a profound (but difficult) way. The distinction between subject and object no longer applies; the interpreter and what is interpreted do not exist independently; in our *being-in-the-world*, we exist amidst our prejudices which become the normal conditions of experiencing anything. There is never a neutral viewpoint because our assumptions cannot all be made explicit. All that we can do is strive to expand our horizon slightly, or gain a better partial view of our pre-understandings within the social context. Cognition occurs in our praxis or concerned action in the world.

The crux of this for our purpose is the idea that action is not the same as reflection—we are always somehow in the situation. This means we cannot see clearly the everydayness we live in and objects and properties will only arise out of what is called a **breaking down**—a "hiccup" in proceedings, which brings the entities involved clearly into view. This is the space which is available for concerned action; it is not something which has been defined by an objective observer, nor by any individual, as is implicit in the way we do our R&D. The way in which technology arises in the world and the effects which it has are seen in a different light if this philosophical position is entertained.

A Grounding in Biological Science

The Chilean biologist, Humberto Maturana, has been the greatest inspiration to our enthusiasm-for-action about this. This probably reflects our faith in practical science as a solid grounding for working with the difficult circularities which arise in reasoning about second-order R&D. Maturana has pointed out that there is an important difference between

doing philosophy and doing science. In the former, it is the philosophical principle which is the issue and is being preserved whereas, in science, it is the observed phenomenon which has to be respected and principles are expendable if they do not do justice to the phenomenon as observed, however that can be determined.

This requires an agreed scientific method which is sufficiently rigorous that another scientist may be able to repeat an experiment and have the opportunity to draw a similar (or different) conclusion. This works well and is very useful, of course, but it is also likely to be mistaken for the objectivity of an independent, external, reality—as in first-order R&D. It is in biology that the evidence has arisen which convinced us that a belief in this kind of objectivity (and the related notion of information transfer) was not serving us well because it obscured our explanations and could be obstructing progress in R&D.

Maturana and others working in neurobiology realised that there was no progress being made by trying to map an apparent external reality of objects and properties onto the nervous system of a living organism—the representationist model did not seem to work. They proposed that the essential organisation of living entailed the systems notion of operational closure (a closed loop) and a self-generating, cognitive, process which Maturana called *autopoiesis* (see Maturana and Varela, 1973; 1980; 1987). The biochemical and physical structure of an organism operates as a network of production which is capable of conserving the identity (or organisation) of the organism as a whole; when this fails, it dies. The structural dynamics, or molecular operations, are the sole determinants of the state of the organism, but at the same time the organisation as a whole has its own properties, which represents a kind of autonomy not previously regarded in biology (see Varela, 1979).

Although it is open to material and energetic exchange with its surrounding medium, the organism is closed to any instructive interaction, *i.e.* information or meaning. What are known as environmental stimuli can only trigger responses non-specifically; the responses are determined

by the physiological coherence or structure. Stimuli and responses are not inputs and outputs as suggested in the cybernetic model; physiology is strictly a set of correlations rather than a messaging system and there is no possibility of referring to the outside from the inside. Thus the information processing idea is a category error in systems logic, confusing a system-external with a system-internal view and obscuring rather than clarifying the biological explanation.

The relationship between organisms and with their environment is a particular kind of structural coupling in which changes within the organism and changes in its surrounding medium are interlocked; they trigger and select one another from the available possibilities, maintaining a structural congruence as long as the relationship exists. Thus we see coordinations of action which we describe as learning, *etc.*, without appreciating that this is an observer's view which describes a particular domain of interaction, not the constitutive biological mechanism. We claim that an adequate and complete explanation of the way in which living organisms change (in order to remain themselves!) is this recursive, coupled, triggering interaction between structure-determined (but plastic) entities.

This manifests itself in our networks of conversation. As with the philosophy of Heidegger, the difficulty in seeing this lies in its obvious everydayness. We do not realise that, being only observers, living in actions which can only be described in our language, we bring forth our particular reality. We are not saying that we *create* this reality, but that we bring into operation ("relevate" to use David Bohm's term) its objects and properties by the process of making distinctions in our conversation. Thus the "problems" which we research and the "solutions" which we "discover" do not have the grounds in objective reality which we attribute to them, but they are grounded in our biological process of cognition. This notion of cognition accords closely with the Gadamerian philosophy previously mentioned.

Failing to acknowledge this, we tend not to take responsibility for our actions, attributing them to a situation (and an ethic) which exists out-

side of us. Our association with Maturana and our colleagues has brought forth our view that everything we say contributes to making our world together and it is a laborious (but potentially rewarding) "bootstrap" sort of process. The two-way effect of our internal state (or emotions) on our possible range of actions and our conversations on our possible internal states means that nothing in conversation is trivial, in a biological sense. Von Foerster (1984) has described this process as "synthetically deterministic," but "analytically indeterminable." Thus we cannot know the future, nor predict with a high degree of accuracy the outcome of research, but we can know that we are contributing to it in a certain way, *i.e.* develop an ethic which is biologically based.

Another Look at What Scientists Do

Traditionally, we refer to science as reductionist in nature, but Maturana has suggested that, strictly speaking, it is not. It is our ability in science to propose generative mechanisms, or operational links, which explain (rather than describe) the relationship between parts which appear separate, that is more important than simply describing smaller and smaller parts. Accordingly, he and Varela articulated four operations as the criteria of validation for a scientific (as distinct from a non-scientific) explanation. We have found it useful to depict this four-step process, which is not dependent on quantification for its integrity, in the following manner:

- (1) *describing* a phenomenon that has been experienced and doing this in a way that allows others to agree or disagree as to its existence;
- (2) *proposing* an explanation for the existence of this described phenomenon. This explanation functions as a generative mechanism in the sense that, when the mechanism operates, the phenomenon appears;
- (3) *deducing* from the first experience, other experiences that are coherent with the first and which would

be expected to result from the operation of this mechanism that has been proposed as an explanation; and finally,

- (4) *experiencing* the other phenomena that were deduced in step (3).

Although quantification is not essential to this process, it is often useful, of course, particularly in step (3).

Using these operations in science, we begin and end with an experience. We explain experience with experience and the generated explanation remains secondary to the world of daily living. What we may refer to as our new knowledge is only understood in terms of effective action. The particular scientific method used does not give the theoretical explanation any universal validity, but its merit lies in being itself an explanation of a mechanism which can be repeated whenever necessary and referred to as science. Feyerabend (1988) has argued from his interpretation of the history of science that there can be no such thing as a "proper" scientific method (*i.e.* for producing "facts"). In practice, what happens is that our being-in-the-world goes on, but our way of doing something has been changed, not arbitrarily, but through positively addressing a communally-recognised need.

An Example of Non-Traditional R&D

One of us (David) is a Principal Investigator of a current R&D project* in the context of the lives of pastoralists and their families engaged in Merino wool production in the semi-arid region of NSW, to the north of Broken Hill. It is a complex project, which has a team of investigators, each with a different background, engaged in a web of conversation with the pastoralists, because it carries a commitment to second-order R&D. Its progress to date can be checked against the four steps

described earlier which are the criteria chosen to validate whether what is being generated is a scientific explanation or not.

The description of the phenomenon (Step 1), or the subject of this study, was the everyday observation that people (including pastoralists) want to take certain actions and not others. They need no persuasion to do what they want to do, but can resist the most sincere attempts to motivate them to do something else (even something which may seem to others to be highly desirable). This phenomenon is particularly evident in the low adoption rates of new technologies or ideas by farmers generally and the concern expressed about this by those responsible for agricultural extension (see Russell et al, 1989; Hartley, 1991). In other words, the research question here is: why do these pastoralists not adopt more of the new technology which is, in theory, available to them?

The explanation proposed (Step 2) as a generative mechanism which might constitutively account for this phenomenon was as follows: *the individual's emotional state of enthusiasm determines the category and scope of actions which can occur*. A corollary of this is that pastoralists in this situation have an enthusiasm-for-action which predisposes to certain types of management practice, but does not permit certain other kinds of action to occur. This explanation derives from Maturana's statement that emotions are, essentially, bodily predispositions for action.

In the course of conversation, some of the pastoralist's enthusiasms-for-action have become apparent. From the operation of these enthusiasms, what other experiences and actions could be deduced (Step 3) which would be coherent with their actions in relation to R&D technology and also be constituted by their particular emotional state? One such indicator was deemed to be: taking ownership of intermediary tasks for facilitating farm management discussions or access to the world of R&D, *e.g.* action-oriented meetings. At this stage, there are indications that this is happening, but further work is needed on the final stage of verification by experience (Step 4).

The role of the researchers includes their part in co-revealing the

sequences of actions which affect the adoption of new science or technology by these pastoralists. Accordingly, the conversation is not a "fact-finding" mission, but a sharing of experiences or relating a sequence of events. Thus it includes the narrative type of explanation in which the coherence of happenings over time and the intuitive flow of meaning is more important than the precision of the data. Agronomic and other data are also collected, with the accuracy required to avoid confusion, but it is via the telling of stories by both researchers and pastoralists that the vital phenomenological data (of experiences) and hermeneutic data (of interpretation) can be recorded and collated into patterns.

Possible outcomes from this sort of research are not entirely predictable. As well as being "analytically indeterminable", they are a communal creation based on personal responsibility, not a discrete technological "fix" applied to a physical problem which existed "out there." The practical value of this work lies in its ownership by the pastoralists themselves, its potential to open doors in new directions, its immediate applicability and its testability as a coherent scientific endeavour.

The phenomenon of blindness to everyday cognitive function (when compared with the external technological fix), can make this type of research appear to some to be rather simplistic or even superfluous. Indeed it seems to us that the more successful agricultural R&D personnel (particularly extension officers) utilise this kind of process while officially operating in the first-order R&D sense. We are referring to what these people are actually doing and to the limitations of working within an outmoded and inappropriate paradigm of technology and information transfer. It is not good enough in science to simply guess at the mechanism, however. Unravelling it carefully leads to stepwise forward progress, *e.g.* the next step could be to address the history of interactions which produced the particular enthusiasms of the pastoralists, today.

* This is a joint project of the Faculty of Agriculture and Rural Development, University of Western Sydney, Hawkesbury (D.B. Russell), the School of Crop Science, University of Sydney (R.L. Ison) and the Orana and Far Western Region, NSW Agriculture (P.C. Davey) which is funded by the Australian Wool Corporation.

Management Associated with R&D

Management is often equated with decision making, which is described as a process of choosing between alternative courses of action—an heuristic search in a given space of possibilities—but this description does not fit the observed phenomenon very well. Winograd and Flores (1987) have shown how this idea (in theory) fails to account for the twin effects (in practice) of the background and being-in-the-situation. It happens that the hard part is formulating the question, or seeing how the alternatives relevant to a particular context came into being. Most problems requiring decisions tend to be fuzzy issues which are not really clear to anyone involved with them, so they are based on a personal judgement and, as we have seen, they are construed in our language, e.g. the "energy crisis."

This means that the space of solutions is generated by the commitment in language of those who talk about it; it is not really a matter of choosing, but of generating. By regarding language, not as a means of transmitting information, but as a "mutually-orienting social action" (Winograd and Flores, 1987), we see that the conversation generates the commitment to action. We design our future in our language. The business of ranking alternatives and choosing between alternatives, which we tend to regard as the most important stuff of management, is far from being the complete story.

The process of determining research priorities, for example, is a particular way of making distinctions which serves the conversation at a relatively high level in an administrative hierarchy where broad resource allocation is controlled. When we acknowledge that these particular distinctions also serve to consolidate our blindness, we appreciate the need to use them at other levels, not as absolutes, but only as triggers to promote a conversation, which is the necessary predisposition to action.

The allocation of funds for research on the basis of (supposedly) clearly-defined, relatively long-term outcomes, while it is a necessary device at a certain level of managerial conversation, is also a construction on which we cannot rely too heavily

at the level of action. What appears to us to be really happening in the most effective research is that there is (1) a genuine commitment in language, *i.e.* a desire to follow a particular line of research (a personal enthusiasm-for-action) coupled with (2) a public concern that this could, possibly, be a way of seeing something to which we were previously blind. Therefore research funding is (and should be) influenced more by effective conversation-for-action, than by the distinctions made in setting priorities and goals. It is when someone proposes a new distinction which was not seen in the research program planning that the most effective action occurs. The increasing tendency in some organisations to tie research funding strictly to industry-defined goals, if it narrows the conversation-for-action, may gradually stifle research progress in those organisations.

We are suggesting that an awareness of the possibilities and the limitations of our natural process of cognition, based on modern biology and contextual philosophy, enlarges the scope of managerial options in R&D. It is in positive, uninhibited, conversation that we can make visible a portion of our previous blind spots. The "lateral thinking" of de Bono makes use of this. Expert Systems and Decision Support Systems based on the information-processing model have a role, but it may be a limited role, unless the phenomenon of blindness, which is an integral part of our cognition, can be addressed. Winograd and Flores (1987) discussed the ways in which computers could be more effectively utilised as "tools for conversation" within organisations which are seen as networks of commitments and where the role of management is essentially to take care of these networks.

A Conversation for Change in the Practice of Science

Based on what we have said, we claim that change will occur within a tradition, gradually, by means of actions arising in a network of conversation. We have attempted to list, below, what we think might be some principal elements of that conversation so far as scientific R&D is concerned. We cannot predict the form of the conver-

sation nor the precise nature of the change, but we believe that these elements foster the development of second-order R&D. Crystal ball gazing, either on a grand scale by the world's best experts or in local politics, has been notoriously unsuccessful. Current practice in science and philosophy indicates to us that, acting in a concerned manner, we can see where we are going on a short-term basis and thus we can live according to our particular biological ethics at all times. Ironically, the protection of our future seems to depend not so much on knowing all the long-term consequences as on acting responsibly and rationally today.

The elements are:

1. An invitation to join in a conversation in which the other's "story" is respected as legitimate at all times and it is acknowledged that the conversation itself is important. This conversation will include farmers and their families, advisers and researchers and their managers, as equal participants, though with varied talents and skills.
2. A sharing of concerns, unresolved questions about what to do next, loose threads or dead-ends in our stories and also hopes and dreams. This is a kind of dialogue through acknowledging *different* ways of seeing things rather than a striving for consensus. In it there is a space created for talking about such matters as the vicissitudes of the farming environment, the underlying ambitions of the people concerned (farmers, advisers, researchers and managers), the "silly" ideas which could not be justified in prudent research or farming, and the gems of wisdom contained in stories from far and wide—an opportunity for listening as well as spelling out.
3. An acknowledgment of both the need for managerial distinctions about priorities and goals, in research and on the farm, and the inherent limitation of adhering to these distinctions—because of the phenomenon of blindness in the cognitive process which can turn a creative spiral into a vicious circle.

It is in acknowledging that we don't-know-because-we-can't-see-that-we-don't-know that the space is created for a genuine commitment in language to arise.

4. A **commitment** in language to the resolution of some of the communally-generated issues, or matters of concern—within the network of conversation itself. This involves taking responsibility for characterising the current state of irresolution, e.g. costs exceeding the value of production, apparently irreversible land degradation, losses due to pests and disease, etc. and designing a stepwise progression towards its resolution, which will have been reached when there is no longer any need for that discussion.

Second-order R&D entails a personal responsibility based on acknowledging the process of cognition, so that the emphasis is shifted somewhat from research priorities and goals *per se* to the nature of the conversation itself. The term "technology (or information) transfer", still serves as an heuristic device (and trigger) to talk about one aspect of this, despite its limitations as an explanation of the mechanism involved. The cognitive biology and contextual philosophy described here appears to us to offer a better explanation and acknowledgment of what it is that the most successful people actually are doing within our present R&D system.

In no sense do we advocate a weakening of scientific practice. By enlarging the grounds of rationality to enable second-order R&D to become a larger part of our tradition, we claim that the practice of science will become a still more useful aspect of our human endeavour.

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Heidegger, Gadamer and the Game of Science

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Martin Heidegger was a mountain farmer, born, so to speak, with skis on his feet. Mountaineer, farmer and skier are essential accoutrements for philosophers no less than for popes. Farming binds one to Aristotle with a centrality in the experienced real, a connaturality with nature in which the object-subject dichotomy disappears, and practical philosophy with its subtle links to ethics justifies itself by always seeking for what is better. A good farmer knows his animals by name, almost in the Adamic sense, and can take liberties, indeed intimacies, with them in the quest for that better.

Heidegger had mountains in his soul, the highest and unconquerable one was Being, Being without existence, without a name in any naturalistic sense, about which it was possible to speak only in analogical terms. The mountain, aperiodically and unpredictably in human and personal history is alternatively resplendent in bright sunshine or hidden behind a blinding snowstorm. But it is always *there* with a derivative *thereness* in all existing things, whether entities or relationships. The mountain springs gush forth the pure clear draught of life. Even 'the turn' in Heidegger's philosophy refers to a corner of a zig-zag trail leading up the mountainside, a change in direction, not as I had first thought to the consummate skill of a Christiana turn in skiing. That would give a different meaning. It was from

Being that Dasein, the being-in-the-world, derived its essential note of temporality.

In skiing one must overcome every flatland instinct by committing one's whole body to a downhill lean from the ankles, deliberately courting a fall. In this way a new physics is discovered in which body and mind, skis, slope and snow come together in a new unity and harmony. One has the sense that one is not skiing but being 'skied.' All of this is prior to a language of description. As skill develops and after many crashes, obstacles in one's path, like moguls, become occasions for gaining momentum, for increasing experience and indeed, exhilaration. One proceeds down the slope in the face of infinitely varied snow conditions with a mixture of coordinated rationality and purpose, heuristics and the playing of calculated hunches. One does not confront brick walls but skirts around them.

At this point we might introduce a postmodern flavour by noting that the skis today, the instruments whereby the enframed real writes on the skier, may be made of high-tech ceramics, aerodynamically designed by computer and imported from Austria. The boots may be made of polyurethane and imported from America and the stocks of lightweight metal alloy and plastic imported from France. It may be claimed that there is a subset of modern technology which is counter-indicative of alienation, which in fact enhances the interpreta-

Both Heidegger and Gadamer see hermeneutics as basic explication of the experience of truth. The hermeneutic styles of these two are compared by employing the metaphor of play. This basic human good may have general applicability in the construction of knowledge of the real world and thus an important role to play in the philosophy of science.

tion of the text and offers a more direct construction of the experienced real. The same can not be said for snowmobiles or even perhaps of the factories in which the skis are mass produced.

For Heidegger, technology is a way of revealing; science is a way of seeing, a be-holding of that which is revealed. Science depends on technology as a cultural way of seeing that which is revealed. To quote Heidegger,¹

Modern science's way of representing pursues and entraps nature as a calculable coherence of forces. Modern physics is not experimental physics because it applies apparatus to the questioning of nature. The reverse is true. Because physics, indeed already as pure theory, sets nature up to exhibit itself as a coherence of forces calculable in advance, it orders its experiments precisely for the purpose of asking whether and how nature reports itself when set up in this way.

Thus this text reveals Heidegger as perhaps the father of instrumental realism, the 'praxis/cultural perception' model of the scientific enterprise; something of a 'skier's guide to the galaxy.' There is no unique praxis and a wide variety of cultures centrally related to one's accepted worldview. As Thomas Kuhn² has pointed out, "a paradigm is pre-requisite to perception itself." Although the real continues to express itself, i.e. truth continues to happen, it is not possible for science to exhaust it. This is far from being a commitment to the self-cancelling thesis of the relativity of truth.

Hans-Georg Gadamer, on the other hand, was a flatlander and his game was handball. This game, involving two players who 'dialogue' with each other by means of a hard rubber ball hit with the hand, is played on a flat court with walls; no player has privileged status by virtue of the terrain. The players lose a lot of sweat and apart from the sting of the ball on the hand, run the risk of skinning the knuckles on the sidewall in the attempt to return a ball with particularly tricky curvature.

In his famous painting of the School of Athens, Raphael depicts the philosopher Parmenides with a contemplative mien, standing on a block of

marble which symbolises eternal and immutable Being. In Gadamer's handball the masonry wall might serve the same purpose. The ball, symbol of the dialogic mode of being-containment, is conditioned by the wall at each valid play, receiving from it the multiplicity of possible trajectories and curvatures over and above those intended by one's friendly opponent. A symbol always has vastly more meaning than its physical embodiment. What emerges from the repeated use of a symbol is much greater than the sum of the insights occasioned by each use. The real is ultimately non-representable. The derivation of the word 'symbol' is fortunate for our present purpose. It comes from the Greek 'symballein' to throw together or put together. The word 'ball' is also from 'ballein,' to toss, to throw, to dance. 'Ball' is also a social assembly for the purpose of dancing; as the current teenage argot would have it, 'having a ball.' This enables us to introduce the notion of 'celebration' into the knowledge quest, but one must not let fundamentalist scientists know this since it is an affront to their hubris of self-conscious seriousness.

In his lectures to students, Gadamer³ was wont to mention every possible facet of the matter in hand, being scrupulous to mention every complication in the argument. His friends had invented a new scientific measure, the 'Gad,' which was a measure of unnecessary complications. Even so, his method was found productive; one could be comfortable with the vision which finally emerged. One can imagine that in his handball Gadamer was adept at putting much 'English,' or in his case 'German,' on the ball. But it was not each play of the ball which riveted attention, but rather the outcome of the whole game and in the light of this the individual strokes could be evaluated. Indeed there would be a whole series of games in the overall competition and even vows to be better next year if the team was runner-up this year, as Gadamer's team often were. Whatever prejudgements as to appropriate strategies for the future were it is certain that they would be modified by and changed by actual involvement in the context of the game. One could not lean on

one's own understanding but kept oneself open to what was more than oneself, the communal, the greater whole, the universal. There can be no play without prejudice. It takes the experience of the game to open the mind, to modify and develop one's initial conjectures which are often rash and premature.

It is interesting to note that even though Heidegger sometimes turned up to handball practice he was not very good at it. In fact Heidegger stayed away from philosophy conferences on principle but one cannot imagine Gadamer ever missing one.

In handball, the attitude one has in addressing the ball is of critical importance. If one regards the situation as the pitting of the indubitable 'I,' the ego, the subject, with its vast range of essential and basic skills against 'It,' the spinning and bouncing object, one will very quickly find one's limitations. In handball the object-subject dichotomy reduces the game to positivistic 'hit-and-giggle.' The successful player becomes so thoroughly absorbed in the context of court, ball, opponent, hand and whole self in a totally unconscious manner that the game, so to speak, has a life of its own. Once again the players are being played. The ego is lost in the seriousness of the game, a seriousness not unrelieved by joy. There is an *ecstasis* away from the self, an excursion to and return from a world discovered as one's very own. The game provides a framework, a context, in and through which a revealing, an outcome, even a destining, might occur. In any game, of course, there are rules to be observed, limits to freedom which strangely still allow an infinite variety of individual plays. The rules provide a context within which the real may manifest itself, even if in a limited way.

It is only after the game that one can relax with a good book and a long cool swig of beer to replace the sweat, as Gadamer is shown in a photograph on one of his books, that a post-mortem to the game can be held. But in doing this one returns to the artificial language of criticism and bookishness. It is not the game which is now discussed but a construction, a figment of the imagination. Just as any manual on sex education, discussing sex in a calm, objective and dispassionate

manner, is not talking about sex at all, any positivist account of phenomena is a kind of pornography.

Both Heidegger and Gadamer affirm that we have ourselves towards existence as players towards a game. Being not at home in the world is like not allowing the game to play us. It is from this condition that method and epistemology arise, the object and subject split, the split between I and others, self and world, past and present.

Gadamer sees a unity in art, play and truth. In this he may be reflecting the perceived unity in all the basic human goods, the basis of human flourishing and freedom, seen by those in the Aristotelian ethical tradition. John Finnis, in his book *Natural Law and Natural Rights*,⁴ lists these constituents of human flourishing as follows: (i) life, (ii) knowledge (i.e. *scientia*), (iii) being reasonable in one's actions (which includes integrity and authenticity), (iv) play, (v) appreciation of the beautiful, (vi) friendship, (vii) love of God. These are the first principles of practical reason. Each is in a sense generic and may be realised in a vast variety of instances. There is no measure whereby one can be set as more important than another. There is no *a priori* hierarchy, only a hierarchy established by the free choice of each individual person. Of whatever kind of person each one is, the ordering of ends will be consonant with that kind. Practical reasonableness would seem to be involved in such a choice and also to direct the pursuit of all the other human goods. It is not difficult to see that any choice of a good action, for example, musicianship, will involve the other human goods to a greater or less degree. All are authentic ways of being-in-the-world which are emblematic of Being *per se*, the finality of human fulfillment.

Thus it makes perfect sense to consider truth and beauty, art and *scientia* as play. Play is, in Gadamer's sense, the way of being of an artwork, which has nothing to do with the artist's disposition or that of those who enjoy it. It has nothing to do with personal subjective preference. Art is manifestation of being. Heidegger,⁵ in his treatment of Aristotle's four causes, sees them as 'modes of occasioning,' 'playing in unison.' He quotes Plato's *Symposium*: "Every oc-

casional for whatever passes beyond the nonpresent and goes forward into presencing is *poiesis*, bringing-forth." This 'bringing forth' applies not only to artifacts, not only to art and poetry but also *physis*, the arising of something from out of itself, nature's presencing. *Physis* is *poiesis* in the highest sense, the 'bursting open' belonging to 'bringing forth,' e.g. the bursting of a blossom into bloom, in itself.' The terms 'presencing,' 'bringing forth,' 'belonging to' and 'bursting open' are, of course, examples of abstract relations which are essential understandings in properly human functioning and it is their share of being which makes connaturality possible. In *scientia* it is not entities which command attention so much as the relations between them. Through abstract relations, knower and known blend together in a cognitive unity, in a sharing of common 'form.' The activity of knowing must share common structures with the source of that activity, viz. the thing known. The activities and passivities of the human person inside are mirrored in the activities and passivities of external nature, the propensities and potentialities inside are realised outside, and so on.

To follow Gadamer is to learn how futile is the quest for scientific exactness, the assignment of measure and number, as if these were once-for-all given. He is not at one with current and dominant ways of thinking and he sees this as an essential note of the philosopher. However he affirms one universal as basic to any approach to the life-world and that is hermeneutics, the classical art of understanding texts; texts which are not limited to books. The natural sciences are special cases of the hermeneutic process. In speaking of the aims of *Truth and Method*, Gadamer says:

It aims to seek out the experience of truth that transcends the realm of control of scientific methodology wherever it is met and to inquire into the legitimacy proper to it. Thus the *Geisteswissenschaften* merge with kinds of experience which lie outside science, with the experience of philosophy, with the experience of art, and with the experience of history itself. All these are kinds of experience in which

truth that cannot be verified by the methodical means of science makes itself known.⁶

We have moved away, of course, from the era in which Gadamer wrote, and in which scientific methodology had much more credibility as a means of seeking truth than it does at present after the onslaught of modern philosophy of science. Developments in this field since 1977 have been quite prolific, as shown in Steve Fuller's excellent review⁷ and the impression that there is a revolution yet to come seems inescapable. It is now quite difficult to say what science is, and whatever it is as a phenomenon, its adherents by and large would no longer impute to it a monopoly of truth, except those fundamentalist fossils threatened by revolutionary change. Gadamer's central thesis is that truth cannot be equated to so called 'methodical truth.'

The philosophy and sociology of science phenomenon might be described in terms of an image due to Umberto Eco, viz. voyeurism in sport. Eco is talking of 'big sport' like big soccer, and the voyeurs are not only the spectators but include the whole panoply of vicarious players. This is second order sport, 'sport squared.' 'Sport squared' generates 'sport cubed,' the discussion of sport carried out by the sports press. This generates in turn discussion on the sports press, sport raised to the *n*th power. As Eco says,⁸ "The discussion on the sports press is discourse on a discourse about watching others' sport as discourse."

Although one feels instinctively that Gadamer would still feel at home with sport raised to the *n*th power, for Heidegger it is not a manifestation of the real at all but what he called "idle talk." To quote Heidegger,⁹

Idle talk is the possibility of understanding everything without previously making the thing one's own ... Idle talk does not have the kind of Being which belongs to consciously passing off something as something else ... Thus, by its very nature, idle talk is a closing off, since to go back to the ground of what is talked about is something which it leaves undone.

For Gadamer, on the other hand, every hermeneutic excursion is an essay in self-understanding by means of understanding others; an assimilation and integration into emerging aesthetics; a response to the disintegration and fragmentation resulting from alienation from tradition. The aim of hermeneutics is mutual understanding, but this is not all that is envisioned. Gadamer uses an artistic and cultural metaphor which he calls *Bildung*. By self-surrender and serving a man is on the way to the full realisation of his human potential which is the cultivation of the image of God within him. To paraphrase a well known saying, "The glory of God is man fully enculturated." *Bildung* bespeaks a mode of knowing which is a kind of direct apprehension of the real according to taste and to *sensus communis*; an immediate judgement without any more basic criteria of judgement. It is, nevertheless, a mode of knowing which is educable.

One can avoid Heidegger's "idle talk" criticism by oneself being involved in a first order game. But even then it is a question of degree. The particular enemies of hermeneutical understanding are the kinds of knowledge claims which cannot be understood. There are many examples in the disembodied, monological, so-called objective sciences. Hermeneutics provides a viewpoint for a critique of the abstract, propositional, mono-disciplinary subject matter engineered by experts whose focus of reflection is then their superior head knowledge. Even so, alarm bells should only ring when such attempts at knowledge are applied in human and social contexts. The same kind of criticism applies when technical solutions to pre-conceived problems are first worked out in the head and are then made-to-happen in exterior contexts without feedback from the context. Such 'master craftsmen' operate on a world conceived as a fixed reality to be manipulated by 'quick-fix' solutions. However, as Fisher¹⁰ has pointed out, attempts to 'fix' problems rest on the technologist's implicit understanding that problems can be understood by constructing an ever more detailed picture of them as distinct from the technologist himself as problem formulator. The focus of reflection is 'What can I DO?'

On the other hand, the central reflective focus of a Gadamer game is "Who am I becoming?" It is experiential learning for Being. It is a practical participative involvement in real world projects and contexts. One sees oneself as a facilitator and co-creator of what is better, with the humility to understand that a change for the better enacted in the local experiential context may be a disaster when applied globally.

We can summarise with a quotation from Gadamer:

To seek one's own in the alien,
to become at home in it, is the
basic movement of spirit,
whose being is only return to
itself from what is other.¹¹

Notes

¹ Heidegger, M. (1977). *The Question Concerning Technology*, Basic Writings, New York, Harper and Row, p.303.

² Kuhn, T. (1970). *The Structure of Scientific Revolutions*, Chicago University Press, p.133.

³ Gadamer, H-G. (1985). *Philosophical Apprenticeships*, trans. Robert R. Sullivan, MIT Press.

⁴ Finnis, J. (1980). *Natural Law and Natural Rights*, Clarendon Press, Oxford.

⁵ Heidegger, M. (1977). *Op. Cit.*

⁶ Gadamer, H-G. (1975). *Truth and Method*, trans. William Glen-Doepal, Sheed and Ward, London, introduction.

⁷ Fuller, S. (1989). The philosophy of science since Kuhn: readings on the revolution that has yet to come, *Choice*, December, p. 595.

⁸ Eco, U. (1987). *Travels in Hyperreality*, Picador, p.162.

⁹ Heidegger, M. (1962). *Being and Time*, Harper and Row, New York, p.213.

¹⁰ Fisher, F. G. (1991). *Dissolving the*

Stranglehold of the Fix: A Role for Social Construction in Dealing with Environmental Dislocation, CHAST (in print).

¹¹ Gadamer, H-G. (1975). *Truth and Method*, *op. cit.*, p. 15.

Asian Studies and the Fusion of Horizons

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Our economic survival depends on trade with Japan; our geographical proximity to Asia must be acknowledged in our trade and foreign policies; if we are to maintain our current standards of living we must open up new Asian markets; ... and so on. These and like statements are commonplace. Equally commonplace are statements concerning the educational entailments: we need to know a great deal more than we do about Asia; we need more research in Asian subjects; we need to attract more students into Asian Studies;... etc.¹ Universities have been given the task of providing the knowledge necessary for dealing with Asia and accordingly motherhood and mission statements have proliferated; committees and institutes have been set up; reports prepared; strategies developed; funding and enrolments increased; and new Asian Studies programs and courses initiated.²

In the rhetoric which accompanies this commendable flurry of activity, there is general agreement that Australians are deplorably ignorant of Asia, and that what is needed is an increase in knowledge. We must increase our knowledge of Asia or suffer the economic consequences. But within this general agreement two voices are audible, expressing a tension between pragmatic aims on the one hand and scholarly and cultural aims on the other. One voice argues that universities are to provide us

with the practical knowledge we need to attain an equal or preferably privileged position in our trading, diplomatic, economic, and other dealings with Asian countries. This is to acquire knowledge for the enabling power it gives.³

Another voice, by contrast, argues that this approach runs counter to the time-honoured role of universities in fostering a disinterested scholarship which pursues knowledge for its own sake and without concern for immediate outcomes. Further, an exclusive preoccupation with practical knowledge will not give a balanced view of Asia, one which acknowledges its great cultural achievements. In our pursuit of knowledge for economic gain, we must not overlook the importance of the cultural aspects of Asia. We must balance our courses dealing with the everyday concerns of the marketplace with courses in art and literature. We must not be branded as Philistines, driven by merely economic motives.

Both sides of this argument put their faith in knowledge as the key to success in our dealings with Asia. It is ignorance that disables us in our encounters with the East. On the one hand we lack the type of knowledge that has immediate practical application; and on the other we lack a knowledge of Asian culture which would allow us to present ourselves to Asians as other than uncultivated and mercenary bumpkins.

There are two arguments in the rhetoric accompanying the current refurbishing and expansion of Asian Studies programs in Australian universities. One says we must acquire a factual knowledge of Asia sufficient to enable us to deal on equal terms in the marketplace. A counter-argument claims that these pragmatic considerations are to be balanced by disinterested scholarship and by introducing students to the arts of Asia. By reference to aspects of Hans-Georg Gadamer's hermeneutical philosophy this paper indicates the shortcomings of both arguments. It contrasts knowledge and understanding, and indicates that a true understanding of Asian phenomena cannot be gained solely by language studies and an accumulation of factual knowledge, nor by an acquaintance with Asian culture, but requires a dialogical exchange involving a fusion of horizons, in which the prejudices we bring to an encounter with the unfamiliar are transformed. Gadamer's ideas, it is suggested, have profound implications for the educational aims and practices of Asian Studies.

Both sides of the argument are plausible; but both overlook the fact that knowledge, whether of practicalities or culture, is not alone sufficient to improve our skills in dealing with our Asian neighbours. It is not only knowledge we lack, but understanding; and lack of understanding does not equate either a lack of knowledge or, as will be shown, a lack of goodwill, tolerance, or the ability to sympathize or identify with the outlook of others.

If understanding is none of these, in what does it consist? Hermeneutical philosophy is concerned with answering this question, and one of the aims of this paper is to pick out some parts of its answer and apply them to clarify the way in which we come to understand an unfamiliar culture. Hermeneutics is concerned with the way in which we interpret and arrive at an understanding of a text, but its findings can be extrapolated to every event of interpretation and understanding, including the interpretation and understanding of Asian modes of thought or action. We come to an understanding of the "text" of the Asian phenomenon in the same way that we come to an understanding of a written text, or of anything else that needs to be interpreted and understood. An application of the findings of hermeneutical philosophy, and especially Hans-Georg Gadamer's contributions to that philosophy, disclose some of the inadequacies of considering the function and aims of Asian Studies exclusively in terms of knowledge.

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Underpinning university strategies for the development of Asian Studies is the assumption that they aim to accumulate and teach knowledge and that they are or should be objective, to accord with the Cartesian and scientific ideal that separates the subject from the object and disallows prejudices or any other subjective state of mind to intrude into the relationship. In this view an encounter with an Asian culture is an encounter with something wholly other; one's own predilections, ideologies and cultural proclivities play no part in the equation. One knows the other from a distance.

This corresponds to the first of three types of I-Thou relationship that Gadamer describes to elucidate the sort of dynamics that come into play in the hermeneutical event of understanding a text.⁴ His explication of the I-Thou relationships serves equally well, however, to indicate the way in which we come to an understanding of anything unfamiliar, such as a foreign culture, which can here be taken as the "text" or the "Thou" which we are attempting to interpret.

The first mode of encounter of the I and the Thou discussed by Gadamer is that in which the Thou is treated as wholly separate and as an object to be manipulated and controlled. The I confronts the Thou "in a free and uninvolved way, and, by methodically excluding all subjective elements in regard to it,... discovers what it contains."⁵ The I is not interested in the Thou as a human being, but only in "human nature," so that the I "seeks to discover things that are typical in the behaviour of one's fellow men and is able to make predictions concerning another person on the basis of experience."⁶ Thus viewed as an impersonal object, the behaviour of the Thou is made predictable, just like any other typical event we experience.

Gadamer places this relation to the Thou among those approaches to understanding which evidence a "naive faith in method and in the objectivity that can be attained through it."⁷ It is an approach, says Gadamer, which is typified by the social sciences when they attempt to emulate the methods of the natural sciences.

This approach is flawed in that it,

takes account only of a partial aspect of the actual procedure of the human sciences, and even that is schematically reduced, in that it is only what is typical and regular that is taken account of in human behaviour. This flattens out the hermeneutical experience...⁸

By treating the other as an object, the interpreter prevents it from speaking for itself, so that no dialogue takes place. The conversation is wholly one-sided.

Gadamer says this objective form of interpretation "contradicts the moral definition of man"⁹ in that it

views him as a means to be used to attain ends that are to one's own advantage. In this connection, Gadamer cites Kant, who says that it is morally irresponsible to use others as a means to an end, since man is always to be considered as an end in himself.¹⁰ To treat the Thou as an object lacks morality because it involves the explicit or implicit domination of the other.

The second form of interpretation discussed by Gadamer is the sort of conversation in which the I acknowledges that the Thou is a person but nevertheless remains self-related. The conversation lacks reciprocity; the relation is reflective, in that for every claim of the Thou the I makes a counter-claim.

One claims to express the other's claim and even to understand the other better than the other understands himself. In this way the "Thou" loses the immediacy with which it makes its claim. It is understood, but this means that it is anticipated and intercepted reflectively from the standpoint of the other person.¹¹

This is a struggle for mutual recognition. In an extreme case it can lead to a complete domination of one of the two speakers. In this relationship the "dialectic of reciprocity that governs all I-Thou relationships is inevitably hidden from the mind of the individual."¹²

When I think I know what the other says better than he does himself, "put words into his mouth" and speak on his behalf, I successfully silence any claims his proposals might make on me. I do not accept the meaningful content of his utterance as a truth claim that impinges upon and calls into question my own concepts of what is true.

Gadamer cites as an example of this form of dialectic "an authoritarian form of welfare work," which penetrates "all relationships between men as a reflective form of the effort to dominate. The claim to understand the other person in advance performs the function of keeping the claim of the other person at a distance."¹³

In this form of Asian Studies the interpreter is not concerned whether or not the culture studied can validly lay claims to aspects of truth. The

interpreter speaks for the culture but only to the extent that what is said performs a self-serving function. The interpretation is entirely self-related; the interpreter does not see his or her own culture in a new way in the light of the unfamiliar one, nor accepts the unfamiliar as a challenge to his or her own beliefs and attitudes. The interpreter accepts no responsibility to answer the questions the other raises.¹⁴

In speaking for the other culture the interpreter claims to understand it, and thus rules out the need to answer its truth claims. The interpreter claims to speak for the other in a free, unprejudiced and objective manner; and it is precisely this "objectivity" which prevents the Thou from contributing to or participating in the dialogue. Here again, as in the first form of encounter, the Thou remains remote and there is none of the reciprocal and equal give-and-take of true dialogue.¹⁵ The I rejects a mutual and living relationship with the Thou and thus destroys the moral bond of the relationship and the true meaning of what the other has to say.

The third approach to an encounter with the other is one in which the I experiences the Thou truly as a Thou, that is, listens to what he has to say and recognizes his claim to truth.¹⁶ For true listening the I must be open to what the other says.

But this openness exists ultimately not only for the person to whom one listens, but rather anyone who listens is fundamentally open. Without this kind of openness to one another there is no genuine human relationship. Belonging together always also means being able to listen to one another. When two people understand each other, this does not mean that one person 'understands' the other, in the sense of surveying him. Similarly, to hear and obey someone does not mean simply that we do blindly what the other desires. We call such a person a slave. Openness to the other, then, includes the acknowledgement that I must accept some things that are against myself, even though there is no one else who asks this of me.¹⁷

Similarly, in the hermeneutical experience of an alien culture, I must acknowledge the validity of its claims, not by simply acknowledging its otherness, "but in such a way that it has something to say to me."¹⁸

With regard to the idea of "openness" Gadamer cites Schlegel's "axiom of familiarity,... [namely,] that things must always have been [and must be now] just as they are with us, for things are naturally like this."¹⁹ This attitude negates openness, being a naive appropriation of the other, an assimilation that disallows any appreciation of the differences that make another culture unique and thus denies that it has anything new to offer us. By contrast,

The hermeneutical consciousness has its fulfilment, not in its methodological sureness of itself, but in the same readiness for experience that distinguishes the experienced man by comparison with the man captivated by dogma.²⁰

By listening to what the Thou has to say and opening up to his questioning I recognize him to be a person. The I not only questions the Thou, but is in turn open to the questions the Thou asks. This is to enter into a dialogue which is capable of carrying the interlocutors along in such a way that the I and the Thou become a we. Gadamer points to the Platonic dialogues as the exemplary form of real conversation, in which,

... language, in the process of question and answer, giving and taking, talking at cross purposes and seeing each other's point, performs that communication of meaning which, with respect to the written tradition, is the task of hermeneutics.²¹

The true hermeneutical dialogue is thus one which proceeds by question and answer, and the task of the interpreter is to act as an interlocutor in a Platonic dialogue with the foreign culture, opening up to an interrogation by what is found there. In this one does not dominate the other but enters into an exchange between conversational partners.

The Fusion of Horizons

Gadamer claims that we do not and cannot approach a text with a mind like a *tabula rasa*. We bring with us anticipations, a body of beliefs, concepts, attitudes, norms and practices, which are instilled by our historical experience and constitute our life-world. The text, by contrast, belongs to a different life-world, removed in space and time. The interpreter who seeks understanding, therefore, can only assimilate the text of the other by structuring it in a different framework than its own. That is, the interpreter relates it to his own familiar conceptual framework, while at the same time respecting and preserving its otherness and not simply appropriating it for his own purposes. This is what Gadamer refers to as a "fusion of horizons."²²

An "horizon" is the tradition-situation which circumscribes one's understanding at any moment.²³ It is the general context within which we view and evaluate things.

Every finite present has its limitations. We define the concept of 'situation' by saying that it represents a standpoint that limits the possibility of vision. Hence an essential part of the concept of situation is the concept of 'horizon.' The horizon is the range of vision that includes everything that can be seen from a particular vantage point.²⁴

Gadamer uses the term both in a temporal and spatial sense: an horizon is historically formed, and represents the perspective bequeathed us by our past.²⁵

In this way Gadamer likens the limits of the physical world to the world formed by our "prejudices," that is, by all the expectations, judgments and forestructures of meaning and truth we bring with us to every event of interpretation.²⁶ He says that,

... a hermeneutical situation is determined by the prejudgments which we bring with us. They constitute, then, the horizon of a particular present, for they represent that beyond which it is impossible to see.²⁷

An horizon thus corresponds to a system of prejudices, and different systems of prejudice determine different horizons.

Horizons are not static, but continually change as do our prejudices; and, in reverse, changes in our horizon change our prejudices. Horizons, that is to say, are limiting and finite, but at the same time changing and fluid; they define the limits of our vision, but at the same time are open and porous, so that,

The closed horizon that is supposed to enclose a culture is an abstraction. The historical movement of human life consists in the fact that it is never utterly bound to any one viewpoint, and hence can never have a truly closed horizon. The horizon is, rather, something into which we move and that moves with us. Horizons change for a person who is moving.²⁸

For Gadamer every event of real understanding necessarily involves a fusion of horizons. We see the other from the position bounded by our own horizon, but that horizon is changed in the process of viewing the other, so that the other point of view is integrated into our own and a wider understanding of the matter under consideration results. The boundary separating the horizons disappears and they become one. This is neither the aggregation of two separate and closed horizons, nor the subsumption of the other horizon into one which remains unchanged and whose validity remains unquestioned. On the contrary, the horizon of the interpreter moves from within to embrace the other in such a way that the other assumes a continuing effectiveness. This means that we approach the interpretation of the horizon of meaning of the other not by leaving our own horizon behind, but by expanding it to include the other.

Habermas, speaking of Gadamer's concept of horizontal fusion, compares the process of coming to an understanding of the other to the learning of a foreign language, which we learn on the basis of our native language. To learn a foreign language we virtually repeat the learning

process we went through when learning our own language. We are, he says, drawn into these learning processes by way of a mediation of the rules that we internalized in learning our own language. We develop an understanding of the other by way of the mediation of what we bring to the interpretation from our own tradition. Hermeneutic understanding, therefore, is,

... the interpretation of texts in the knowledge of already understood texts. It leads to new learning processes out of the horizon of already completed learning processes. It is a new step of socialization that takes previous socialization as its point of departure.²⁹

This translation is a transposition, not in the sense of moving into the position of the other by disregarding ourselves, but by bringing ourselves into the position of the other. When we thus transpose ourselves into the situation, says Gadamer, we become aware of the otherness, the "inextinguishable individuality" of the other, so that,

This placing of ourselves is not the empathy of one individual for another, nor is it the application to another person of our own criteria, but it always involves the attainment of a higher universality that overcomes, not only our own particularity, but also that of the other.³⁰

Interpretation thus requires the involvement of our own conceptions and pre-conceptions.³¹ When we attempt to understand the alien we cannot simply step out from the boundaries of our own horizon into those which define the horizon of the other, since we are always ontologically grounded in our own historically wrought situation.

To try to eliminate one's own concepts in interpretation is not only impossible, but manifestly absurd. To interpret means precisely to use one's own pre-conceptions so that the meaning of the text can really be made to speak for us. In our analysis of the

hermeneutical process we saw that to acquire a horizon of interpretation requires a fusion of horizons.³²

This rules out the possibility of reaching an understanding of another culture by approaching it as a self-contained and isolated entity that can be studied objectively. We cannot gain access to the other except by way of the mediation of our own preconceptions. We cannot study the other *in et per se*, but only from the base of our own historically fashioned viewpoint.

When the interpreter claims to be unprejudiced and objective, he "denies that he is historically affected—both *in* what he understands the text to mean and *by* what he understands the text to question."³³ This denial defers the moment of application of the interpretation, its application as a questioning of one's own situation, the application which Gadamer asserts is the only true event of understanding.³⁴

The text [the alien culture] is questioned, but not the questioner. Thus to deny the necessity with which one's own prejudices come into play in the event of understanding is to deny the possibility that the truth of one's own prejudices come into question.³⁵

As Ricoeur points out, the dialectical concept of the fusion of horizons negates objectivism, in which treating the other as an object is premised on the forgetting of oneself; and it likewise rules out any notions of an absolute knowledge of the other, which would be to suppose that the other can be articulated within a single, self-enclosed horizon.³⁶

In this light the alien other is no longer seen as a static and passive object from which we can extract a monosemic meaning to be used for our own purposes of manipulation, but is seen as an inexhaustible source of everchanging and polysemic possibilities for changing our understanding of the other and ourselves.³⁷

By interpreting the other we "re-construct" it, in that it receives a new concretization; and our interpretations are always "constructs," in the sense that they always start from the

position we occupy within our own horizon, so that we will always project the structure of our horizontal world into that of the other. This could not be otherwise, without an abrogation of the formations that make us what we are.

• • •

The fusion of horizons is worked out by way of the dialectic of question and answer. Every text is the answer to a question, and the initial task of the hermeneut is to find the question the text answers.³⁸ As with the interpretation of a text, so also with the interpretation of a foreign culture. We come to an understanding of that culture by seeking the questions concerning the human condition that the culture answers, and applying these questions and answers to ourselves. This is a matter of relating the horizon defined by the other to our own prejudice-defined horizon. We ask the text whether the question it answers is one that has relevance for us, here and now; and we ask whether the answer the text gives is an appropriate answer to the questions we are asking about ourselves in our present situation.

We come to the dialogical encounter with the other with anticipations of what he will say; we have preconceptions concerning his meaning-horizon. If, however, everything he says coincides with our expectations no dialogical exchange will take place. It is only when he says things that are unfamiliar, strange or unintelligible that our interest is engaged and our unreflective self-preoccupation is broken. Only then are our preconceptions called into question.³⁹ The challenge of the apparent eccentricity or abnormality of the other contains the possibilities for a restructuring of our own horizons. This involves inhibiting "the overhasty assimilation" of the other to our own expectations of meaning, and listening to the other "in a way that enables it to make its own meaning heard."⁴⁰

In this light Gadamer asserts that the hermeneutical task is not to resolve but rather to accentuate the tension between the familiar and the unfamiliar horizons. We are to avoid a premature absorption of the text's horizon into our own before we fully

recognize its foreignness; we are to contrast it with our own so that it can fully assert itself. Only then can the hermeneut's own horizon be fruitfully united with the contrasting horizon. There are, then, two phases in the interpretational process, one in which the foreignness of the other's horizon is highlighted, followed by a fusion of that horizon with our own.⁴¹

The expansion of our horizons is thus by way of a response to what is unknown or unfamiliar in the other. The unknown questions us; and every rewarding dialogue is an excursion into the unknown. We enter the unknown for what lies there to be discovered. In dialogue we wander in unexplored territory not with the intent of annexation, but of returning home to our own familiar horizons and seeing them in a new way because of what we have seen elsewhere.

This reviewing of our own world in the light of what we see in another can be so radical that, as in a wholly engaging conversation, we no longer remember nor care to remember what our starting viewpoint was. Every act of interpretation and understanding, therefore, is a transformation of the horizon made up of our historically fashioned prejudices, and an assimilation of the unfamiliar.

This does not necessarily mean that such a process is or can be made fully conscious. The fusion of horizons is not some objectively controlled event, but happens as it were "behind our back," to be realized in deliberate consciousness only in self-reflective retrospection.⁴² Our conscious awareness of our own horizon is only part of the interplay of horizons, which involves forms of tacit interaction.⁴³ This being so, it follows that what has been described cannot be made into an hermeneutic "method."

The fusion of horizons is, rather, an instance of the working of the hermeneutical circle. Every event of interpretation proceeds by way of a projection of a prior understanding of the whole, which reflects back to explicate the parts. The attainment of an understanding of an alien culture proceeds by way of the same spiral pathway, in which we project a provisional anticipation of the meaning we are attempting to understand, and bring this back to disclose the original

base of our projection. In this way the parts making up that base are refined, modified or abandoned, so as to restructure it for another projection of understanding.

This is not, says Gadamer, a formal circle; nor is it objective or subjective, but is an interplay between the interpreter and what is being interpreted. The anticipation of meaning is not subjective, but determined by the common bond that links us with what is being interpreted, a bond that is constantly changing as the interpretation proceeds.⁴⁴

Implications for Education

In the light of the foregoing it is seen that the tension in the rhetoric of Asian Studies between the arguments for a pragmatic approach in the cause of economic self-interest and those for a pure and disinterested scholarship accompanied by an appreciation of Asian art and culture are two expressions of an objective outlook. They both assume that the Asian phenomena to be studied are objects rather than interlocutors in a conversation. They both assume that the alien has nothing to say to us, or that we can speak on its behalf. In either case no understanding can arise. We have cut ourselves off from the possibility of exchange, which is the prerequisite for true interpretation and understanding.

Gadamer's insights indicate that the teaching of languages considered as objects and the teaching of facts—economic, political, historical, cultural or whatever—are not enough to give students the skills needed to understand Asia. To view the Thou as an object, Gadamer claims, precludes or hinders understanding. The mastery of a language or the accumulation of a vast compendium of factual knowledge does not guarantee understanding, any more than does the study of art without involvement and an openness to its truth claims.

Our understanding of the thinking and actions of the other does not arise from a critical analysis of objective facts, but by processes of interpretation; it results from judgment rather than from rational analysis, if this latter is taken to mean the fragmentation and reduction of phenomena in

the name of a rigorously logical method.⁴⁵

The development of understanding involves the development of skills of judgment and evaluation which, for reasons spelt out elsewhere, cannot be taught.⁴⁶ It does not follow, however, that these matters lie outside the concern or responsibility of the educator, since, even if unteachable, they can nevertheless be encouraged by creating a conducive educational environment. Skills in interpretation and judgment can be developed by drawing the student into a more self-reflexive and self-aware involvement with the text of the alien.

If understanding involves judgment, which cannot be taught, then the function of an education in Asian Studies is not only to teach the teachable, languages and facts, but to foster hermeneutical skills, proceeding with the recognition that education is not objective and neutral, a methodical analysis of the facts of a matter, but *inherently* judgmental, that is, proceeding by judgment in the etymological meaning of the word, by a "right speaking" (*jus dicum*), which depends on a right listening in the context of a dialogical exchange.

In contrast to this, the current trend in Asian Studies towards an exclusive concern with what has immediate economic relevance runs the risk of producing not judicious interpreters who are right-speaking because they understand, but philistine technocrats who, even if knowing everything, understand nothing. By the same token, the study of artworks is of little avail in enhancing understanding if they are considered solely as objects of aesthetic, historical, exotic, decorative, or monetary interest. Artworks only prompt understanding when they are seen as truth-tellers which carry meanings to question us and reveal new aspects of the world and ourselves.⁴⁷

The development of hermeneutic skills involves the training⁴⁸ of latent abilities in interpreting, understanding and applying what the other has to say. This is not the teaching of a method, but education in the sense of education, a "bringing out" or "leading forth," of latent abilities of judgment and evaluation by way of dialogue, in which the student and the

teacher and the student and the text interact in a dialectic of question and answer which draws out meanings from the text and from within themselves.⁴⁹

In this process we do not seek to develop a sympathetic fellow-feeling for the other on the basis of the traits and attitudes we have in common and are therefore familiar, but, quite on the contrary, seek out what is radically different and unfamiliar in the other, using these dissimilarities and disparities to prompt a dialogical questioning of our own prejudices and to open up possibilities of changing and expanding our horizon. To recognize the otherness of the other, and to incorporate that otherness into our own horizon, is to achieve a true understanding of the other.

This is not a matter of identifying with the other, or of being sympathetic to or even tolerant of his views or actions. It does not involve uncritical acceptance. A true understanding of the other can lead to a total rejection of what he stands for. What the other has to say can provoke a rejection of his prejudices on some matter, just as, in some cases, it might evoke a total rejection of our own.

In sum, Gadamer's notions concerning the fusion of horizons point to the need for a radical rethinking of the educational aims of Asian Studies. If his arguments are persuasive, Asian Studies should aim not only to provide a knowledge of language and of factual information, but also to instruct students in the dialectics of interpretation, in which what is alien in the text of the other becomes the starting point for a process of questioning the horizons of our own prejudicial world in the hope of expanding them. Asian Studies should aim to add understanding to knowledge by way of a fusion of horizons.

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Notes

¹ "Asian Studies" is an undefinable construct, as chimerical as the "Orientalism" that Said dismantled. It is used here to designate a vaguely defined geographical area containing cultures perceived as dif-

fering from our own. The term can be interpreted according to one's preconceptions, in the manner of a Rorschach ink blot, whose interpretation is interesting not for the way it defines the object, but for the way it defines our own preconceptions or, to use Gadamer's term, our "prejudices."

² An indication of this upsurge in awareness of Asia is the recent inauguration of a School of Asian Studies at the University of Sydney. Another token is the re-emergence after long absence of a course in Japanese history in that university's History Department.

³ This involves the complex knowledge-power dynamics spelt out by Foucault, Said, and others. See, e.g., Michel Foucault, *Power/Knowledge*, ed. Colin Gordon, Brighton, Sussex: The Harvester Press, 1972; Edward W. Said, *Orientalism*, London: Routledge and Kegan Paul, 1978. These dynamics are complicated for us by the fact that in many situations the Asian country now wields the power-knowledge cudgel. We are the ones who are attempting to gain access to Japanese technology and managerial skills, not the other way round.

⁴ Hans-Georg Gadamer, *Truth and Method*, London: Sheed and Ward, 1975, pp. 321 ff. The following discussion of the I-Thou relationship follows Gadamer's text and the commentarial paraphrase given in Kathleen Wright, "Gadamer: The Speculative Structure of Language," in Brice R. Wachterhauser (ed.), *Hermeneutics and Modern Philosophy*, Albany, State University of New York Press, 1986, pp. 193-218, (esp. pp. 195-204, "The Event of Language and Its I-Thou Structure").

⁵ Gadamer, *op. cit.*, p. 322.

⁶ *Ibid.*, p. 321.

⁷ *Ibid.*, p. 322.

⁸ *Ibid.*, p. 322.

⁹ *Ibid.*, p. 322.

¹⁰ *Ibid.*, p. 322.

¹¹ *Ibid.*, p. 322.

¹² *Ibid.*, p. 323.

¹³ *Ibid.*, p. 323.

¹⁴ Wright, *op. cit.*, p. 200.

¹⁵ In all of this Gadamer is speaking of our own historical past, our tradition, taken as

a text. The experience of the 'Thou' is what he calls effective-historical consciousness (*Wirkungsgesch Bewusstsein*).

¹⁶ Gadamer, *op. cit.*, p. 322.

¹⁷ *Ibid.*, p. 324.

¹⁸ *Ibid.*, p. 324.

¹⁹ *Ibid.*, p. 325.

²⁰ *Ibid.*, p. 325.

²¹ Gadamer, *op. cit.*, p. 321.

²² On the notion of the fusion of horizons see Gadamer, *op. cit.*, pp. 273 f., 337 f., and 358; Jan Edward Garrett, "Hans-Georg Gadamer on 'Fusion of Horizons'," *Man and World* 7 (1978): 392-400; Richard J. Bernstein, *Beyond Objectivism and Relativism*, Oxford: Basil Blackwell, 1983, pp. 143 ff.; Roy J. Howard, *Three Faces of Hermeneutics: An Introduction to Current Theories of Understanding*, Berkeley: University of California Press, 1982, pp. 151 ff.; Richard E. Palmer, *Hermeneutics: Interpretation Theory in Schleiermacher, Heidegger and Gadamer*, Evanston: Northwestern University Press, 1969, pp. 201 f.; Georgia Warnke, *Gadamer, Hermeneutics, Tradition and Reason*, London: Polity Press, 1987, pp. 82, 103-7 and 169; Lawrence M. Hinman, "Quid Facti or Quid Juris? The Fundamental Ambiguity of Gadamer's Understanding of Hermeneutics," *Philosophy and Phenomenological Research* 40 (1980): 512-35 (esp. pp. 525 ff.); Klaus Dockhorn, "Hans-Georg Gadamer's Truth and Method," *Philosophy and Rhetoric* 13, 3 (1980): 160-80 (pp. 173 f.); John Hogan, "Gadamer and the Hermeneutical Experience," *Philosophy Today* 20 (1976): 3-12; Jack Mendelson, "The Habermas-Gadamer Debate," *New German Critique* 18 (1979): 44-73 (pp. 54 ff.); Günther Buck, "The Structure of Hermeneutic Experience and the Problem of Tradition," *New Literary History* 10, 1 (1978): 31-47 (pp. 39 ff.); Dieter Misgeld, "On Gadamer's Hermeneutics," in Robert Hollinger (ed.), *Hermeneutics and Praxis*, Notre Dame, Indiana: University of Notre Dame, 1985, pp. 143-70 (pp. 154 f.); Kurt Mueller-Vollmer, "Introduction," in Kurt Mueller-Vollmer (ed.), *The Hermeneutics Reader—Texts of the German Tradition from the Enlightenment to the Present*, London: Basil Blackwell, 1985, pp. 1-44 (pp. 37 ff.); Alfred Schutz, "Concept and Theory Formation in the Social Sciences," in R. Dallmayr and Thomas A. McCarthy (eds.), *Understanding and Social Inquiry*, Notre Dame: University of Notre Dame Press, 1977, pp. 225-239 (p. 288); Jürgen Habermas, "A Review of Gadamer's Truth and Method," in Dallmayr and McCarthy, *op.*

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²³ Gadamer uses the term "horizon" in a different sense to Husserl and the phenomenologists, for whom it conveys the idea of an intentional structure of consciousness. See Peters, *op. cit.*, p. 41; Garrett, *op. cit.*, p. 393; cf. Helmut Kuhn, "The Phenomenological Concept of Horizon," in Marvin Farber (ed.), *Philosophical Essays in Memory of Edmund Husserl*, Cambridge: University of California Press, 1940, pp. 106-123.

²⁴ Gadamer, *Truth and Method*, *op. cit.*, p. 269.

²⁵ As Habermas (*op. cit.*, p. 342) says, the concept of the fusion of horizons "holds true for the vertical plane in which we overcome historical distance through understanding as well as for the horizontal plane in which understanding mediates geographical or cultural-linguistic distance."

²⁶ On Gadamer's use of the term "prejudice" and its rehabilitation from the Enlightenment's "prejudice against prejudice" see Gadamer, *Truth and Method*, *op. cit.*, pp. 235 ff. ("The Hermeneutic Circle and the Problem of Prejudices"). The concept of "prejudice" is at the core of Gadamer's thinking, and most of the materials listed in the bibliography will refer to it.—The term "forestructure" is borrowed from Heidegger, who uses it to designate a threefold structure of understanding whereby in any event of interpretation we have already placed the matter to be interpreted in a certain context, viewed it from a pre-given perspective, and conceived it in a certain way before we interpret it. See Martin Heidegger, *Being and Time*, trans. John

Macquarrie and Edward Robinson, London: Basil Blackwell, 1962, pp. 190 ff.; Hubert L. Dreyfus, *Being-in-the-World*, Cambridge, Massachusetts: MIT Press, pp. 198 ff.

²⁷ Gadamer, *Truth and Method*, *op. cit.*, p. 272.

²⁸ *Ibid.*, p. 271.

²⁹ Habermas, *op. cit.*, p. 344.

³⁰ Gadamer, *Truth and Method*, *op. cit.*, p. 272.

³¹ In relation to Said *et al.*, this is to say that in this sense every interpretation is a construction or a reconstruction.

³² Gadamer, *Truth and Method*, *op. cit.*, p. 358.

³³ Wright, *op. cit.*, p. 201. In a footnote Wright adds that this is the meaning of Gadamer's notion of effective-history (*Wirkungsgeschichte*).

³⁴ On the coincidence of interpretation, understanding and application see my other paper in this collection, "Hermeneutics and the Application of Design Rules."

³⁵ Wright, *op. cit.*, p. 201.

³⁶ Ricoeur, *op. cit.*, pp. 61-2.

³⁷ This means that there is no one correct interpretation of the other, but that the other horizon comprises a range of interpretational possibilities. This has important implications for education and research, since it means that attempts to discover what the culture of the other "means," as when, for example, the alien culture is viewed as a set of signifiers and the task of the interpreter to indicate their significance, can never be definitively formulated or taught, but will differ not only from person to person, but from one situation to another according to the context of application. The teacher cannot teach *the* meaning of the alien.

³⁸ Gadamer, *Truth and Method*, *op. cit.*, pp. 333 ff., "The Logic of Question and Answer."

³⁹ Given that we do not simply dismiss the other's statements out of hand as irrational, primitive, superstitious, uncouth, or whatever other pejorative rules the other out of the discourse. Dialogue always presupposes a certain degree of

goodwill and a receptivity to what the other has to say.

⁴⁰ Gadamer, *Truth and Method*, *op. cit.*, p. 272.

⁴¹ *Ibid.*, p. 273.

⁴² Cf. Howard, *op. cit.*, pp. 151 f.

⁴³ Gadamer is vague on this and it would take us too far afield to enter into it in any detail. Garrett, *op. cit.*, pp. 396 ff., discusses the question.

⁴⁴ Gadamer, *Truth and Method*, *op. cit.*, p. 261.

⁴⁵ The case against the use of a rigorous method and logically strict models of process has been made in our papers, Adrian Snodgrass and Richard Coyne, "Is Designing Hermeneutical?" Working Paper No. 1, Faculty of Architecture, University of Sydney, 1990; *ibid.*, "Models, Metaphors, and the Hermeneutics of Designing," Working Paper No. 2, Faculty of Architecture, University of Sydney, 1991; and my paper which appears elsewhere in this collection, "Hermeneutics and the Application of Design Rules."

⁴⁶ This theme is developed in "Hermeneutics and the Application of Design Rules."

⁴⁷ Gadamer develops the theme of the artwork functioning to disclose truth in the Part 1 of *Truth and Method*, *op. cit.*, pp. 5 ff.

⁴⁸ We use the term "training" in its original sense, from the Lat. *trahere*, "to draw, or to draw forth."

⁴⁹ In this way they build themselves up, so that instruction equates construction. "Instruction" is from the Lat. *struere*, "to pile up, to build," that is, to edify. The concept of edification (*Bildung*) plays an important role in Gadamer's thought. See Gadamer, *Truth and Method*, *op. cit.*, pp. 10 ff.

UNDER-STANDING DIS-TANCE

The Presence of Interpretation in Action

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On what do you stand *understanding*, before asking the question 'what is below understanding?' or any other question for that matter—even the questions of foundations.¹ Let's mix what could be read as philosophical and civil engineering metaphors: foundations are always built on given grounds and the knowledge of these grounds always prefigures the problem of foundation—conflating ground and foundation is therefore an error. Pragmatically, how do we know what the foundation is able to support without a knowledge of the ground? Is it not in the first instance by construction, failure or success and reflection (a backward look at the form or its ruin). Does this pre-history, a history before narrative, suggest that what is named empiricism is in actuality a theory in being rather than its reduction to a named theory of knowledge, a theory in being which exists before knowledge as an existential characteristic of being in action as always being before and after the act?

We and the circle turn, perpetually returning but never to the same point. Thus departure is always from a beginning that is never the beginning, it is always *from* and *to* the new, or *from* and *to* the end.

The hermeneutic circle turns *and* spirals, rather than closes. A point in transit, one without a trajectory but one with a destination, so where is it headed? An answer, at least for the moment, could be made. This by say-

ing 'towards negentropy,' that is towards the unity of multiplicity, that is the the end of the world, that is our end as an ending of what we do not know ourselves to be and the end of the category of where we all are. We, as some, find ourselves lost at this beginning, lost in space, stranded, as ever, with our everything as nothing more or less than what is in our *world*, our *hands* and what we *know*.

Already, a Re-writing— and so the Point Turns

Language and sight conflate—metaphysics delivers over to us that which we know as our contemplable knowledge, a knowledge that names what is seen. In this causal relation, we see what we know and in doing so make the visible both visible, as what it 'is,' and invisible, as an unseen and so unknown 'excess,' 'supplement' or 'other.' 'What is' and 'what is known,' are of themselves as themselves. We materially live in the first hand ontic world of material. We also live literally in the second hand ontological world of language. Even with recourse to the 'third hand,' the hand that knows and writes, a hand that always passes our way, leaving its marks and spaces of forgetting throughout the text. The metaphysics of presence, with its carried claim of bringing 'what is' into knowledge, has never managed to bring, or replicate, in full 'what is' in one form of being to an other.

"Wild thing why" do(n't)
"you make my heart sing"

How far are these words away from me?—here I am troubled by proximity. I am reading Gadamer's 'Text and Interpretation,' of course with a pre-given agenda, which no doubt will impose, or transpose, itself onto what I have to say.^b Ever turning from one being in action (I read, I think, I write) to their others, slowly something appears, it is the materialised but illusory representation of what I have been doing. This, in the now broken mirroring of the play of time, space and reality of Tristram Shandy (1759-66), is it. In the seeming playfulness of the rhetoric of this paper, in the ill-fitting encounter of lifeworlds that it assumes, there is something at stake. Such is its provocation.

Is it any longer possible to understand *Under-standing*—expressed as, ‘that beneath—that upon which we stand—as the foundation of what we know’? At what distance are we from the material ground that we once understood by the interpretative action of actively being in action, but subsequently obscured by an unknowing knowing of what we appear to be doing knowingly. Putting this another way: if we have become ungrounded then how do we know how to act?

Now you might want to ask—but are we really ungrounded, and if so how?

An answer will be offered, this by a calling up of the *dis-stance* of television. Of course you, who hears or reads, might wish to ask who are we and are we one? Of now, negentroy answers, we are the many named as, as noted, the unified multiplicity (a multiplicity of disunified difference). Spinoza, just one of others of another age, answered *we* are ‘the one.’ Then again you might ask, but where is Gadamer in all of this? The answer—there is more than one Gadamer, and the one that is here is in the text. Of many other anticipated questions one more is posed: is not the employed language here employed antithetical to interpretation in action? The spaces between questions and answers follows.

Moving on: where is the point, what is the point

Where we live, if it is life ‘here’ at this moment in history, is a returning point at the end of history. Teleologies of progress, reason, and a whole clutch of other master-narratives are in a terminal condition, they are *tote*, but, at least in many discourses, not totalled—the temporality of this time of non-writing off, is an everywhere time of both an unknowing and knowing ending. What is new at this, for some stated and for others unstated moment, is what is new at this end, and thus at this beginning. It is the ending of the invisibility, and thus opening to visibility, of the arrival of the moment of a visualised ever coming entropy. The end, always present in its imminence, has now come into sensory view, it has shifted from the imaginary to those pictures

that dance before a warmed up reflected spectral—we see our hot house living in sight. The felt and viewable ecological crisis, is still hinged between turning out for the better or turning out for the worst. It brings the prospect of the chain of events that lead to the end of life as we know it into view. Survival of the species can no longer be taken for granted, it has become a matter of design, that is *action* towards a particular directional choice.

Here before the reduced proximity of our fate, our problematic of *under-standing* returns. Our knowledge of the shifting ground upon which we dwell may be uncertain (the combined outcome of, for instance, the spread of aids, the rate of global warming, the actual growth of the worlds population and the people pressure on essential natural resources are nowhere clearly deliniated). However, the ‘fact’ that we are not certain of the outcomes of our understanding of the flow, and full nature, of events does not mean that no foundation of interpretative action can be laid. The reverse is the case. From the error of our state of knowledge, we have to assume an arrival of the intention of our ecosystem to fail to sustain itself, and thus us. If we act and are wrong, we were going to survive anyway, if we are right we may survive by our action, if we fail to act on the assumption of accelerated entropy we diminish our chances of survival. So, in the recognition, or misrecognition, of ecological intention an intentionality necessary to act to secure the possibility of being arrives as a felt knowledge in being.

Revealed truth, and a trust in the representational ability of language, may be critically undercut, but the necessity of (re)fabricated foundations remain. We depend on that which we have artificially constructed in order to survive. Our knowledge has been false and directionally alien to our being ‘natural,’ it has contributed to the coming of an unnatural as our nature, however, we have no other means, no other Logos available. Our synthetic world was first produced by the arrival of a knowledge which posited a structure in the natural and then, by the creation of structure as a projection, and applied it as a drive of an unnatural,

structured fabrication. Understanding is put forward here as having to be greater than a knowledge that cannot read the text of our *context*, this is to see understanding as that which understands that which *understands* us. We live in a learnt and made world of restrictive reading, the world of the text is diminished to a world of circumscribed authored inscription and textuality. Of course a great opening now appears, and one to fill with qualification and argument. This task, however, will be left awaiting action, action which itself is inseparable from gaining a recognition of an ‘inexhaustibility’ of interpretative reading—a recognition, in turn, which itself enfolds into our multi-vectorial delimiting of experience of knowing, making be and being. We force ourselves, and our knowledge, into being and in so doing dissolve the proximity between self and the world (as the world of other than the world of the self). Reading and relocating Gadamer as he reads Nietzsche, after his reading of Heidegger’s reading of Nietzsche, I write—the Logos of seeing the world as revealed on an accelerated trajectory towards entropy does not reside within a metaphysics in which being is uncovered with a given meaning but one which is posited from a posited meaning.² Reforming for a foundation therefore implies a ‘will to power’ which overwhelms forgetfulness or remembrance of being (the switch play of Heidegger vs Nietzsche) by the possibility of being-in-the-world as being ‘here,’ a ‘place’ which has to be secured.

Another way of telling, which will follow, may omit and say much of what has been said, and more.

An assertion: in our *understanding* we are too distant from our being, as being here (where the world for me is) or there (where the world for me is not), to know where we dwell. We find ourselves at a *dis-stance* from everything. And now three qualifications in support.

Dis-stance is a slight off balancing of Hubert Dreyfus’s retranslation of Heidegger’s notion of what Mac quarrie and Robinson translated in *Being and Time* as ‘de-severance.’³ This concept is a crucial one in understanding Heidegger’s view of the spatiality

and, by implication, temporality of being, as a being in variable proximity to Dasein's 'existential' being-in-the-world. Distance is the nearness or remoteness to being rather than a measure of physical distance. The concept distinguishes between that which is close by remoteness being made to disappear and that which is near to hand, which may be brought close or far from being there. De-severance is a contradictory perceptual geometry of an encountered and unencountered accessibly to the reach and use of being. Heidegger employs radio as one example to reveal that which brings something close, but without bringing it near. He also registers other examples, like spectacles (reading glasses not images), which, in use, are in a physical closeness but remain remote in the unseenness in seeing with them.⁴

Every translation transforms, this in both the mediation of the act of translation itself and in the translational (interpretative) activity of reading as transports the text through one register to others. The intention of translation always puts distance between writers, reader and text, even when the intentionality is a closure of proximity. Translation seems to make available that which remains far away, in this it is an activity of *dis*-stancing. To *dis*-stance then is to slew a viewing from experiential position, a stance, that brings before the eye that which cannot be seen, as observation, from where you are. At the same time it forms an existential space produced in the disappearance of remoteness of the remote. *Dis*-stance enters a lifeworld by technologies of *dis*-stancing. To take two examples—first the televisual and the next theory.

Television is much more than just a technology, it is lifeless lifeworld, a culture without community, a text without limits but, above all, it is a technology of *dis*-stance. In the shadow of the televisual (which is television as it resonates beyond the technology and medium) we live in the midst of everything and everyone. It comes to us, it is projected towards and away from us, it transports, we do not have to place ourselves before a screen for we are wrapped in its figural forms, its languages, its delivered styles, its demanded desires as they permeate commodity culture.

Even in a turning away from the screen, the televisual delivers into the spaces of our lives—fashion, war, suffering, celebration, rhetoric and more, as they flow from its everywhere, after and prior to arrival, and so become that which is trans-lated, accessible and to hand 'here.' This technology of existential space projects us into this world picture. Like it or not we, significantly and by various degrees, dwell in this composite picture, a no place of occupied *dis*-location in which we socially find ourselves (to put it in Heideggerian terms; we are thrown into the televisual, into its world picture as it becomes a key part of the world from which we fall). As *dis*-stanced, we have extreme problems in knowing the remote from the near: we hold the televisual control, the 'remote control' (!) in our hands; we are swept before the lens; our memories, histories, other spaces, other selves return to us; we acquire an intimate knowledge of that we have never experienced; we are surrounded by the commodity promoted world of the televisual.

So where is the 'it' of the televisual? It is everywhere.

So where are we? We are here.

But where is that? It is as far as you can see, it is at no *dis*-stance.

Now to the second example—theory as *dis*-stance. Again we have an off-balanced position of viewing that appears to bring the remote or near close while, *de facto*, it never travels. *Dis*-stance is actually detached, unconnected, but as something else it brings what it is not, but claims to be, to address us. Theory is something else that travels without belonging. Its lack of origin of other than what it is negates geometry that joins and closes space.

The two examples meet, for the televisual and theory become fused in technologies of the technology of *dis*-stance. These we see in the nearby far away entities of computer knowledge systems. Both the speed of the televisual, of theory, and the emotionless disorganic knowing of electronic dead knowledge erases the space of the physical and experiential space of *dasein*—*dis*-stance disorients the sense of either being here or there. It thus throws the spatial and temporal character of being somewhere into a spin.

The uncompleted circle, upon which a dual directional point moves, is completed. The imperative of understanding arrives before us once again. We are left with the question of 'on what does understanding stand.' However, it is essential that we directionally act and react, our life depends on this imperative. In standing we have to learn to move, but to be able to move we have to know where we are in condition of being *dis*-stanced from where we are. Thus, the site of action has to be designated as our *understanding* and so directed towards the ground (as soil, sand or rock) upon which to re-create foundations to make interpretative judgement of entropic proximity. Here of course, questions of metaphysics, truth and action return, but that is another circling

Notes

^{b and 1} And we read: how far is the footnote away, to what is it at the foot, is it not always more than just a matter of information—the information of a text, in a text, that itself exists, in this instance, at a disposition, at distances, towards Heidegger Derrida and Dilthey? Hans-Georg Gadamer 'Texts and Interpretation'^a (trans Dennis J Schmidt) in Brice R Wachterhauser (ed) *Hermeneutics and Modern Philosophy* New York: SUNY, 1986, pp.377-386 (^a refers the reader to a note that notes that the text is a reply to a paper by Derrida, first presented at the 'Perspectives of Interpretation' conference, Temple University (USA), 1982). So let us ask, from where do these foot(prints)notes come and to where do they lead?

² *Ibid.*, p381.

³ Hubert L. Dreyfus *Being-in-the-World* Cambridge (Mass): MIT Press, 1991, pp.128-40.

⁴ Martin Heidegger *Being and Time* (trans John Macquarrie & Edward Robinson) London: Basil Blackwell, 1962, see eg., pp.138-148.

Derrida, Rorty, Gadamer and Poststructuralism in Architecture

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Man's history will progressively become a vast explanation in which each civilisation will work out its perception of the world by confronting all others. But this process has hardly begun. It is probably the great task of the generations to come. No one can say what will become of our civilisation when it has really met different civilisations by means other than the shock of conquest and domination. But we have to admit that this encounter has not yet taken place at the level of an authentic dialogue. That is why we are in a kind of lull or interregnum in which we can no longer practice the dogmatism of a single truth, and in which we are not yet capable of conquering the scepticism into which we have stepped.¹

Ricoeur's quotation accurately captures the spirit of the postmodern condition. Economic and social changes to the structure and ideals of society, disenchantment with the physical results of the practice of universal modernism in architecture and town planning, and sweeping changes in the critical discourse of philosophy, aesthetics, science and linguistics, have so shifted the lens through which we perceive the world that the reductionism and dogmatism of a single truth is no longer a valid way to interpret culture and civilisation. Working against the inflexible postu-

lates and universalising tendencies of logical positivism in philosophy and linguistics and the *Neue-Sachlichkeit* modernism in architecture, postmodern thinking has been characterised by a move towards a more pluralistic, heterogeneous and inclusive conception of the nature of reality.

This paper will consider the impact on architectural theory and practice of the post-structuralist theory of Jacques Derrida and Richard Rorty and the hermeneutic philosophy of Hans-Georg Gadamer. Beginning with a brief outline of the characteristics and major themes of the postmodern context in which they operate, it will consider the current impact on architectural theory of Derrida's deconstruction, and then discuss the potential for further critical positions that may develop in architectural discourse from a consideration of the neo-pragmatism of Rorty and the hermeneutic phenomenology of Hans-Georg Gadamer. Drawing from Rorty's critique of ocular metaphors in traditional Western conceptions of rationality and Gadamer's hermeneutic metaphor of 'play,' the major focus of attention in this paper is the nature of architecture's mode of reception, and the extent to which the Cartesian construct of a distinctive subject/object dichotomy persists in contemporary metaphors for the communication and reception of meaning in architecture.

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The Post Modern Context

Post-structuralist thinking can be located within the general 'delegitimation' of positivist conceptions of truth and rationality that have characterised the post modern condition. Preceding this era objectivist models of thinking constructed a foundational base on which the established positions in architecture, science and linguistics were anchored. This model of reality was characterised by an epistemological scepticism that rejected traditions, myth or ritual as meaningful interpretations of reality; a search for a permanent, foundational, ahistorical structure to our existence in the world; and the attempt to create universal, homogeneous notions of truth based on scientific models of logic. In this context language's goal was to express concepts that map onto objects, properties and relations in a literal, univocal, context-independent fashion. Accordingly, meaning and rationality were regarded as transcending human bodily experience, as abstract symbols represented the physical properties of things in the world in an algorithmic relationship.² Architecture, according to this tradition, was to achieve truth and beauty through a causal relationship between function, structure and form, whilst history was considered in terms of a linear progress to a Utopian perfection.

The intellectual context in which Derrida, Rorty and Gadamer operate has seen the rupturing of the objectivist foundation on which modernism and positivism were built. In architecture the cause of this basic shift in thinking from the paradigms of universal modernism were twofold. Whilst the primary reason was a rejection of the physical results in urban planning and architecture of the modernist utopian vision, the dismantling of the philosophical underpinnings of modernism in philosophical and linguistic context was also an underlying cause. Certainly the critique of objectivity in the philosophy of science that developed from Thomas Kuhn's *The Structure of Scientific Revolutions* and Paul Feyerabend's *Against Method*, the resurgence of interest in the phenomenology of Husserl, Heidegger and Merleau-Ponty, and the semiotics of

de Saussure provided a theoretical context that deflected the focus of attention in architecture away from concerns of function and structure to the question of meaning and communication in the built environment.

In the American context the reassessment of modes of representation in art and literature has led to what Hal Foster recognises as two significant positions in postmodern thought: one aligned with neo-conservative politics, the other related to post-structuralist theory. Both these positions have been embraced in contemporary architectural discourse. Characteristic of the work of Robert Venturi and Michael Graves and the writing of Charles Jencks, the first position is primarily stylistic, involving a belief that the unifying concepts of universal modernism must be displaced, and that a return to history (the humanist tradition), the figure, narrative and ornament, are necessary to counter modernism's functionalism and disregard for history and tradition. In contrast to this line of thinking the post structuralist position, which was pursued in architecture by Eisenman and Tschumi as a reaction against the complacent populism of the neo-conservative position, is profoundly anti-humanist, assuming the 'death of man' both as original creator of unique artifacts and the centred subject of representation and history.³

By the late 1960s, then, new themes emerged in the critical theory of architecture, philosophy, science and linguistics that illustrated a move beyond the dogmas of modernism and positivism. The belief in linear progress, absolute truths, and the standardisation of knowledge systems and production methods were replaced by an interest in the marginal, the celebration of difference and heterogeneity, and a more complex understanding of history and the balance of continuity and change beyond positivism's logical progression towards a Utopian perfection. But this outline of landmark polemical theories and intellectual advances tells only half the story of the postmodern sensibility. For the move from 'dogmatism' to 'scepticism' outlined in the quotation of Ricoeur has seen the pendulum swing between objectivism and relativism, between neo-con-

servative historicism and anti-humanist post-structuralism in an extreme and desperate fashion. In architecture this has seen attempts to reduce buildings to an abstract, meaning-free autonomy running side by side with an 'anything goes' pluralism of historical styles in the name of communication; it has seen computer-driven methodologies of logic sit side by side with a new art-for-arts-sake in architecture, with each new agenda citing a scientific or linguistic theory to give the work an aura of legitimacy and inevitability. Equally, then, the 'shock of conquest and domination' referred to by Ricoeur in the meeting of civilisations could refer to the current colonising drive of linguistic theories in the name of 'intertextuality' to form a generalised body of critical theory as the foundations of several disciplines, or the conquest and domination of the media processes of image representation and commodification into art, architecture and cultural life in general. Baudrillard's description of the postmodern epoch as the move from production to simulation, where there is no distinguishing between truth and reality and mass media simulation, illusions and manipulative cultural feedback, illustrate this increasing sense of social and political impotency. Frederick Jameson, in "Post Modernism and Consumer Culture," takes the postmodern definition beyond the academic context to illustrate the rapidly changing technological, social and economic forces of contemporary culture to which Baudrillard alludes when he states:

new types of consumption; planned obsolescence; an ever more rapid rhythm of fashion and styling changes; the penetration of advertising, television and the media generally to a hitherto unparalleled degree throughout society; the replacement of the old tension between city and country, centre and province, by the suburb and by universal standardisation; the growth of the great networks of the superhighways, and the arrival of automobile culture—these are some of the features which would seem to mark a radical break with that older pre-war society in which

high modernism was still an underground force.⁴

Jameson continues his description of the postmodern condition in the broader cultural realm with the succinct definition of the post modern as:

the transformation of reality into images, and the fragmentation of time into a series of perpetual presents.⁵

In this cultural and epistemological climate the task of architectural theory and practice may well be to move beyond the extreme swings between a reductive objectivism and uncommitted relativism. How can architecture avoid the nihilism of an 'anything goes' pluralism without falling back on the dogmatism of universal truths? How can architecture develop some internal resistance so that its relationship with other disciplines is by "authentic dialogue" rather than by a literal translation and colonisation? How can architecture, as the most social and material of the arts, bridge the gap between the world of everyday experience and the world of ideas? It is with these questions in mind that this essay will discuss the work of Derrida, Rorty and Gadamer.

By way of introduction it could be said that the common thread to these three contrasting figures is their critique of the validity of the 'pure concept,' the 'transcendental signified' as a foundational construction that can govern all modes of human operation. For Derrida this takes the form of a radical critique of the interactions, influences and limits of the language of philosophy on the philosophic conceptions of Truth, Being and Meaning. For Rorty, it is an exploration of how traditional conceptions of knowledge are embedded in ocular metaphors that are closing off rather than opening up the conversations of mankind. For Gadamer it is an attack on the self-conscious methodologies and pure conceptions of knowledge which deny the realities of our ontological and hermeneutical grounding. In architecture the impact of Derrida's linguistic theories has been extensive, whereas the philosophy of Rorty and Gadamer remains largely unconsidered. The following three sections

will outline the major theories of Derrida, Rorty and Gadamer and discuss their ramifications for architecture by considering examples from Robert Venturi and Peter Eisenman.

Architecture and Derrida's Deconstruction of Logocentrism

Jacques Derrida's texts explore the nature of reality by focusing on the struggle between truth and language in the Western metaphysical tradition. His criticism of the 'logocentrism' of Western thinking and his deconstructive readings of many of the classic texts of philosophy have had a wave of influence throughout literary criticism, fine arts, architecture, philosophy and political critical theories.

Before outlining the themes of Derrida's work it should be said that it is difficult to draw any explicit theory or method from his texts. Several reasons for this can be noted. Firstly, there is no stable thesis in any of his writings, for he is a slippery and enigmatic figure who makes problematic the idea of a solution. Secondly, his texts are detailed readings of other texts whereby he provides enactments of deconstruction rather than an explicit theory of deconstruction, and so the reader needs a knowledge of philosophical texts from Plato to Lacan. Finally, his interest is in the marginal and excluded voice of the text and so he often pushes texts to the limits of their intelligibility.⁶ As Derrida's concepts continue to infiltrate into a whole range of disciplines, this preamble is a necessary precaution to an oversimplified translation of Deconstruction as a prescriptive methodology.

Particularly influential in architectural interpretations of deconstruction by Peter Eisenman and Bernard Tschumi have been Derrida's critique of logocentrism in *Of Grammatology*. Here Derrida attempts to use philosophy's language and its own adherence to certain forms of discourse against its claims to Truth, Being and Meaning. In this manner he aims to challenge philosophy's commitment to the 'transcendental signified'—the notion that there are pure concepts with a pure presence of meaning unaffected by the processes of language and signification, power

structures, or the contingencies of daily life.⁷ Western thinking, according to Derrida, has separated truth and language and prioritised truth as if it were temporally and logically prior to language.⁸ This radical separation and prioritising of truth over language is what Derrida calls logocentrism—a structure of binary oppositions of which the master opposition is speech over writing:

(this master opposition has) necessarily dominated the history of the world during an entire epoch, and has even produced the idea of the world, the idea of world origin, arising from the difference from worldly and non-worldly, the outside and the inside, ideality and non-ideality, universal and non-universal, transcendental and empirical⁹

Derrida does not try to exorcise logocentrism, for he recognises the binary oppositions such as speech/writing, order/chaos, good/evil, identity/difference are necessary but not true. He illustrates that the positive terms are intimately connected to the negative—identity, for example, is inevitably bound up with difference, but within logocentrism it is unable to acknowledge its dependence. Likewise philosophy, in its logocentric form, fails to accept its dependence on the ambiguities of language and as a result it fails to acknowledge itself "as a material process, a concrete form of practice, surrounded by and dependent on other material practices."¹⁰

To counter the 'violence' of logocentrism Derrida's processes of deconstruction move through three stages. Firstly, there is the reversal of the binary opposition, so that the subordinate term is placed in the dominant position. This however, only produces a reversed logocentrism. The second stage involves a displacement, whereby the subordinate term is displaced and relocated into the heart of the dominant term, becoming part of its internal condition. The third stage involves the creation of a new term, a hinge word, that confounds the structure of the opposition by simultaneously implicating both the terms of opposition. For Derrida these words are

'differance,' 'archiwriting,' 'trace' and 'supplement.'¹¹

The enactment of Derrida's deconstruction, therefore, is a technique that attempts to fulfil two of Heidegger's terms: 'Destruktion,' meaning "not a destruction but precisely a destructuring that dismantles the structural layers in the system,"¹² and 'Abbau,' meaning "to take part an edifice in order to see how it is constituted or deconstituted."¹³ Derrida's project is not to end philosophy or to step outside logocentrism but to shake the edifice on which philosophy is built from within to reveal its inherent structural weaknesses.

Derrida's deconstruction, and particularly his interpretation in the critical theory of art and literature in the American context, has not passed without its fair share of criticism. One of the most articulate of these critiques is that of Andreas Huyssen in his essay, "Mapping the Post Modern." Whilst recognising Derrida's questioning of the validity of the either/or dichotomies in Western thought as a positive step, he likens French post structuralism and the work of Derrida to a retrospective modernism aware of modernism's own political failings. Hence he describes post structuralism as:

a modernism of playful transgression, of an unlimited weaving of textuality, a modernism all confident in its rejection of representation and reality, in its denial of the subject, of history, and of the subject of history; a modernism quite dogmatic in its rejection of presence and in its unending praise of lacks and absences, deferrals and traces which produce, presumably, not anxiety but, in Roland Barthes' terms, *jouissance*, bliss.¹⁴

Huyssen questions the radicalness of deconstruction as a critical theory when "it merely duplicates on the level of aesthetics and theory what capitalism as a system of exchange relations produces tendentially in everyday life."¹⁵ Moreover he criticises those who have taken up Derrida's deconstruction for replacing one mode of exclusive, reductive thinking for another:

the post structuralist writers privilege aesthetic innovation and experiment... they purge life, reality, history and society from the work of art and its reception, and construct a new autonomy, a new art for art's sake which is presumably the only kind possible after the failure of all and any commitment¹⁶

This presents an appropriate moment to introduce the architecture of Peter Eisenman. Eisenman's position in architecture is characterised by a rejection of both the 'vulgar functionalism' of the *Neue Sachlichkeit* modernism and the post modern populism of Robert Venturi. Working in the avant-garde cultural climate of New York, his work is shaped by the ambitious aim of exploring architecture's potential to express "the dramatic transformation of thought and the conceptualisation of man and his world"¹⁷ that has resulted from changes in the theoretical position of the philosophies of history, science and linguistics. In his early work Eisenman, drawing from the structuralism of Chomsky, searched for the deep structure—a formal, non referential structure to architectural form—to create pure, autonomous architectural objects. By House X Eisenman was drawing from Derrida in his attempts to deconstruct the humanist tradition in architecture. Here he attempted to liberate the repressed fragmentary and unstable 'others' of classical architecture through his process of decomposition. In his Biocenter for the University of Frankfurt (1987) Eisenman bases his design method on the processes by which the DNA process constructs proteins—by replication, transcription and translation: the result being a series of destabilised and fragmentary forms. Again this purely abstract formal approach based on methods of displacing, intersecting solids with voids, rotating, tracing, and imprinting is evident in the more recent Guardolia House (1989). The result of Eisenman's architectural process is captured in the words of Tadao Ando:

freeing architecture from its social and economic context, objuring all presuppositions, excluding all classical concepts of order and hierar-

chy, his (Eisenman's) experiments are aimed at establishing architectural space as the created product of intellectual operations in the purest sense of the term.¹⁸

Eisenman's deconstruction of architecture would seem to have more in common with the critical comments of Huyssen than with the deconstructive techniques of Derrida. Whilst Derrida's critique of logocentrism illustrates the dependence of philosophy on its material practices and methods of discourse Eisenman attempts to further distance the architectural object from the everyday contingencies in which it is embedded. And so while he may contaminate pure form by breaking away from the traditional values of order and hierarchy, his fragmented formalism with such *tabula rasa* beginnings only serves to maintain the privileged position of pure form over and above the limits of architectural practices and the physical context in which it is anchored.

The questionable relationship between Eisenman's architecture and the textual theory of Derrida illustrates the hazards of making any literal translation of deconstruction into architecture. Whilst architecture has no claims to an autonomy that relieves it from the dominance of logocentrism in the Western metaphysical tradition, its very materiality and pragmatic grounding distances it from Derrida's original work. The problem is that as long as deconstruction is considered to be unquestionably architectural it will evade any form of dialogue between architecture and philosophy, and remain as just a metaphoric transfer and literal application of a linguistic theory to transform the architectural object. This methodical and prescriptive transportation of Derrida's ideas as a means of creating architectural form denies architecture the possibility of any true deconstruction by working from inside the limits of architecture. What, then, is the possible form of deconstruction in architecture? It is not simply a metaphoric transfer of an external idea to form a new invention of the architectural object. Instead it is to challenge the binary oppositions and dichotomies that exist within architecture—theory/practice, sub-

ject/object, inside/outside. Whilst Derrida illustrates the problem of these dichotomies, his work provides few clues for their possible resolution within the specific discipline of architecture.

Ocular Metaphors in Question Rorty's critique of 'Mirroring'

The neo-pragmatic philosopher Richard Rorty attempts to explore the unchallenged presuppositions on which the Western philosophical tradition is based. His work seeks to "unmask the pretensions of various forms of philosophic discourse and to clarify what role philosophy might yet play in contemporary cultural life."¹⁹ Rorty sees his major work, *Philosophy and the Mirror of Nature*, as illustrating "new maps of the terrain of human endeavour"²⁰ that might be possible if philosophy could rid itself of its grounding in the Cartesian-Lockean-Kantian tradition. This section will outline Rorty's critique of 'mirroring' and his proposal for a conversational 'edifying' philosophy to replace a foundational, 'systematic' philosophy.

Rorty contests that Western philosophy's conceptions of truth are ingrained in reductive ocular metaphors obsessed with representing and mirroring as the basis for finding the foundations of knowledge. Hence he states:

It is pictures rather than propositions, metaphors rather than statements, which determine most of our philosophical convictions. The picture which holds traditional philosophy captive is that of the mind as a great mirror, containing various representations—some accurate, some not—and capable of being studied by pure, nonempirical methods.²¹

Like Derrida's conception of logocentrism, Rorty accounts for this phenomenon of ocular metaphors as a consequence of history rather than as a truth with any basis in fact or logic. Locating its roots in the philosophy of Plato, he credits its acceptance as the foundational source of knowledge to the theory of mental processes developed by Locke, the mind/body dualism of Descartes, and the conception

of "philosophy as a tribunal of pure reason" of Kant.²² Rorty's work attempts to challenge this thesis that what is 'out there' (objective) is independent of us (subjective), and the presupposition that follows that knowledge is achieved when a subject correctly mirrors objective reality. Rorty describes the nature of the subject/object relationship in this conception of knowledge when he states:

To know is to represent accurately what is outside the mind; so to understand the possibility and nature of knowledge is to understand the way in which the mind is able to construct such representations. Philosophy's central concern is to be a general theory of representation.²³

Philosophy dominated by ocular metaphors assumes that all knowing gets done by the eye that observes. It removes knowledge from any grounding in human bodily experience and constructs a pure, transcendental and representational body of discourse. Heidegger, to whom Rorty's critique of visual metaphors is much indebted, recognised the relationship between these ocular metaphors and a type of foundational, objective, conversation-closing knowledge when he said:

The basic process of modern times is the conquest of the world as picture. The world 'view' now means the product of representational building. In it man fights for the position in which he can be that being which sets the standard for all beings and draws the guiding principles for them.²⁴

Like Derrida's critique of philosophy's attempts to construct a 'transcendental signified' temporally and logically prior to the language in which it is involved, Rorty is suspicious of any claims to a transcendental, objective, ahistorical knowledge by "getting more accurate representations by inspecting, repairing and polishing the mirror." He claims that this traditional conception of philosophy, which he calls 'systematic' philosophy, is only one of a choice of possible metaphors for talking about

knowledge. And so he introduces his notion of an 'edifying philosophy,' a "new, better, more interesting, more fruitful way of speaking"²⁵ which breaks free from the construct of philosophy as providing a cultural grounding through its activities of mirroring. Nominating Dewey, Wittgenstein and Heidegger as "edifying" rather than traditional "systematic" philosophers, he outlines the goal of such thinking as participating in a conversation, and preventing that conversation degenerating into an inquiry searching for any objective truths. Hence he states that edifying philosophers:

are often dubious about progress, and especially about the latest claim that such and such a discipline has at last made the nature of human knowledge so clear that reason will spread throughout the rest of human activity.²⁶

And notes the difference between systematic and edifying philosophy as:

Systematic philosophers want to put their subject on the secure path of a science. Edifying philosophers want to keep space open for the sense of wonder which poets can sometimes cause.²⁷

Rorty's shift of focus from the Derridean philosophy/language critique of the 'pure concept' to the relationship of truth and ocular metaphors is particularly instructive when considering the contemporary metaphors for architecture's mode of reception. For in viewing examples as seemingly different as Robert Venturi's populist 'decorated sheds' or the formal autonomy of Peter Eisenman's post-humanist abstractions, there seems to be the common assumption that, whether historicist or post-structuralist, through formal manipulation alone architecture communicates as a cultural sign or epistemological commentary. Implicit in these linguistic adoptions is the acceptance of the very metaphor Rorty puts to question—the ocular metaphor of mental representations 'in the mind's eye' as mirror reflections of an external reality—which maintains the Cartesian split of a detached, spectatorial subject viewing the object

of their sight. Walter Benjamin, in his essay "The Work of Art in the Age of Mechanical Reproduction," illustrates the questionable nature of this metaphor in relation to architecture when he states:

Distraction and concentration form polar opposites which may be stated as follows: A man who concentrates before a work of art is absorbed by it. He enters into the work the way legend tells of the Chinese painter when he viewed his finished painting. In contrast, the distracted mass absorbs the work of art. This is most obvious with regard to buildings. Architecture has always represented the prototypes of a work of art whose reception of which is consummated by a collectivity in a state of distraction. The laws of its reception are most instructive ... Buildings are appropriated in a twofold manner: by use and perception—or rather, by touch and by sight. Such appropriation can not be understood in terms of the attentive concentration of a tourist before a famous building. On the tactile side there is no counterpart to contemplation on the optical side. Tactile appropriation is accomplished not so much by attention as by habit. As regards architecture, habit determines to a large extent even optical reception. The latter, too, occurs much less through rapt attention than by noticing the object in incidental fashion ... The public is an examiner, but an absentminded one.²⁸

The two major themes of Rorty's work—the dominant position of ocular metaphors in Western conceptions of knowledge, and the potential of an edifying conversational philosophic discourse—are particularly instructive to the dichotomies and oppositions specific to architecture. Not only does it bring into question the spectatorial nature of the subject/object relationship in architecture's mode of reception, but it makes problematic the whole notion of theory building a foundation which practice represents or mirrors. What Rorty recognises in his 'metacritique' is that the subject/object, mind/body dualisms at the heart of these ocular

metaphors are historical constructions which falsely assume they are more than just one of the possible metaphors for explaining our 'being in the world.' Against this the post modern semiotic metaphors, whereby architecture is reduced to a representational sign system (Venturi's 'Decorated shed') or a 'mirroring' of the current epistemological climate and the 'disjunction of contemporary culture' (Eisenman) seem more reductionist than radical.

How, then, can architecture move beyond the grip of the representational mirroring metaphors to achieve a more inclusive conception of architecture's mode of reception and a more dialogical, conversational relationship between theory and practice. The alternative metaphor provided by Derrida in his critique of the logocentrism of 'presence' is that of 'freeplay'—a free and unbound play of signs where 'experience' and 'presence' have no existence.²⁹ But this conception of reality holds a certain distance to architecture, it seems relativistic and abstract to the physicality and undeniable materiality that characterises architecture, and its association of any appeal to experiential confirmation as a return to the logocentric foundation seems extreme and alienating to a discipline which revolves around fostering the life practices of our very being. And so it is in the very different conception of play developed in the phenomenological hermeneutics of Hans-Georg Gadamer that we will look for clues for a broader, more inclusive conception of the subject/object relationship in architecture beyond the reign of ocular metaphor.

Gadamer and 'Play as the Clue to Ontological Explanation'

The phenomenological hermeneutics of Hans-Georg Gadamer is credited with shifting the focus of hermeneutics through his ontological critique of the epistemological and methodological claims of Cartesianism. Unlike Derrida, his critique of the Cartesian oppositions between subject and object, reason and tradition and reason and prejudice stem from a belief and an interest in our human finitude, in the realities of our being in the world. Hence the

major themes developed in his work—the concept of play as the clue to ontological explanation, the hermeneutical circle, and the Enlightenment's prejudice against prejudice—revolves around a belief that we are "truly dialogical beings—always in conversation, always in the process of understanding,"³⁰ and that it is the "dynamics of the play of understanding that underlies and pervades all human understanding."³¹

Heidegger, whose recognition of the ontological significance of understanding and interpretation in our mode of being has been a major point of departure for Gadamer who says:

In *Being and Time* the real question is not in what way being can be understood, but in what way understanding is being, for the understanding of being represents the existential distinction of Dasein. Already at this point Heidegger does not understand being to be the result of the objective operation of consciousness, as was still the case in Husserl's phenomenology. Rather, the question of being, as Heidegger poses it, breaks into an entirely different dimension by focusing on the being of Dasein which understands itself. And this is where the transcendental schema must finally founder. The infinite contrast between the transcendental ego and its objects is finally taken up into the ontological question.³²

Gadamer develops his ontological critique of the relationship between truth and traditional concepts of scientific methodology in *Truth and Method*, which focuses on the experience of works of art, the understanding and interpretation of literary texts and the study of history. He is critical of the 'pure concept,' the situationless ahistorical transcendental idea or method, because of its denial of the realities of the hermeneutical circle in our everyday endeavours. Hence he states:

The hermeneutics developed here is not, therefore, a methodology of the human sciences, but an attempt to understand what the human sciences really are, beyond their methodological self-consciousness,

and what connects them with the totality of our experience of the world.³³

Richard Bernstein further outlines the themes that are Gadamer's major focus of attention when he explains:

The idea of a basic dichotomy between the subjective and the objective; the conception of knowledge as being a correct representative of what is objective; the conviction that human reason can completely free itself of bias, prejudice, and tradition; the ideal of a universal method by which we can first secure firm foundations of knowledge and then build the edifice of a universal science; the belief that by the power of self reflection we can transcend our historical context and horizon and know things as they really are in themselves—all of these concepts are subjected to sustained criticism.³⁴

One of the key concepts to Gadamer's development of the hermeneutic experience of the work of art is his description of "play as the clue to ontological explanation."³⁵ Here he attempts to construct an alternative model to Kant's 'radical subjectivisation' which assumes that the work of art is a self-contained object that stands over and against spectatorial subjects who, in turn, must purify themselves to achieve aesthetic consciousness of the work of art. Gadamer contests that understanding, interpretation and our comprehension of meanings in the work of art has more in common with a dialogue between people or the buoyancy of a game which absorbs its players than with Kant's pure state of 'aesthetic consciousness' or a methodologically controlled investigation of an object by a subject. Through a to and fro movement meaning and understanding occur as our fore-projections are continually altered by participating in the work of art.

There are several important presuppositions in Gadamer's concept of play that help to explain his conception of the hermeneutic circle. Firstly, we all bring our historicity—our prejudices, our bias, and our traditions—to any act of interpretation and understanding. In the Cartesian

framework this hindered and reduced our pursuit of truth, but to Gadamer this attitude is a prejudice against prejudice.³⁶ Gadamer does not consider tradition and prejudice as a limiting condition, for it just means that our grasping of the *other* does not occur from a pure consciousness and transparency of mind but by a process of fusing horizons from the situated, bounded domain in which we are embedded. When Gadamer states that tradition "does not limit the freedom of knowledge but makes it possible"³⁷ he is actually altering the construct of tradition from "the dead weight of the past"³⁸ to something that is alive, something that reshapes itself as it continually informs us, and something that is universal in its inevitability but specific to each person and culture. The second condition developed by Gadamer is that the reception of the work of art is not simply a spectatorial event between two isolated entities but a temporal, experiential, participatory process which dissolves the implied distance in the Cartesian subject/object dichotomy. It is in the playing of play that meaning comes into being, falsifying any claims to meaning by simply clothing an object according to some atomistic language theory. Finally, the to and fro, dialogical relationship of the hermeneutical circle challenges the claims of a set foundation of knowledge or truth. The metaphor of theory as an unchanging foundational edifice from which practice occurs is restructured into a system of question and answer, with each modifying the other to form a body of discourse more concretely embodied in our everyday practices. Indeed, Gadamer's hermeneutical circle articulates more precisely the type of 'edifying' role theory might play, not just because it is a therapeutic alternative to systematic philosophy, but because it has a closer affinity with the way we understand and obtain meaning in our everyday operations.

Gadamer's metaphor of 'play' and his articulation of the processes of the hermeneutical circle challenge many of the assumptions implicit in the theoretical positions of both Venturi and Eisenman. Both think of tradition as something given and determinate, a "dead weight of the past," which is to be overthrown or celebrated. In

Eisenman's thinking there is a distorted consciousness of the changes to the present and a self-conscious rejection of tradition which takes him perilously close to the Cartesian 'transparency of mind' and Hegelian 'spirit of the times' which his rhetoric attempts to undermine. Venturi treats history as an object and as if it were ontologically independent of the subject—a token alphabet of sign systems to clothe the architectural construction. In these overly self-conscious responses to history the notion of history as a living tradition always in a process of reconstitution and informing and shaping our interpretations and understanding is not grasped.

Gadamer's recognition of the subject/object dichotomy as a false construct and his alternative metaphor of 'play' in understanding the work of art is particularly instructive when considering architecture's mode of reception. Whilst the very different states of reception between the concentration and absorption of the work of art and the more circumspect, distracted reception of architecture have been well articulated in Benjamin's quotation, the more temporally fluid, to and fro, experientially based metaphor of play illustrates the limitations of reducing architecture's communicative potential to ocular metaphors of a representational sign system. In this context Eisenman's work is closer to the contextually removed Kantian notions of a pure aesthetic consciousness where the work of art is separated from the contingencies of daily life than Gadamer's concept of play where the subject, the work of art and the world of the subject become one and the same. Likewise Venturi's 'decorated shed' which separates symbol from function reduces the 'happening of meaning' to a spectatorial event without the temporal and experiential to and fro movement of Gadamer's 'play.' Gadamer's inclusion of our effective history, our habits and practices and our participation and experience in a temporal relationship that brings about "meaning through the happening of understanding" illustrates how limited the spectatorial ocular metaphors are as a way of un-

derstanding the mode of reception and acquiring of meaning in architecture.

Conclusion

In discussing the changing conceptions of reality resulting from post-structuralist thinking this paper has focused on Derrida's deconstruction, the neo-pragmatism of Rorty and the hermeneutics of Gadamer. Each of these thinkers have questioned the notion of the 'transcendental signified,' the 'pure concept' untinged by the materiality of our everyday existence, and the methods, beliefs and foundational constructs that result from the search for these notions of truth. But in response to the questions posed at the beginning of the discussion—the issue of architecture finding a more inclusive order that took it beyond the extreme swings between objectivism and relativism and bridged the gap between theory and practice—the ideas of these three polemical thinkers vary greatly.

Derrida, by investigating the relationship between the language of philosophy and the philosophic claims to Truth, Meaning and Being illustrated the role played by hierarchically structured binary oppositions in the Western metaphysical tradition. His enactments of deconstruction on the 'logocentrism' of Western thinking have been popularly embraced in architectural theory, but the relationship to date has been a hazardous one. More often than not they have been a simple metaphoric transfer from the outside that retained many of the exclusive and repressive characteristics of the tradition they attempted to deconstruct, rather than any internal restructuring or displacing of the oppositions and dichotomies within architecture. Moreover, the appropriation of Derrida's metaphors to some of the fundamental questions raised in this paper such as the nature of architecture's reception seem relativistic and dogmatic when transferred to architecture. In particular his 'freeplay,' which negates experience and presence and emphasises the freeplay of signs to decenter man seems futile and unreal to architecture, whose overwhelming physical form and social and pragmatic

grounding ensure an experiential dimension. And so while Derrida calls to attention of the general problem of the binary oppositions of logocentrism in Western thinking, his application in architecture seems distanced and problematic, with only a formally driven reversal of the 'logocentrism' of order and hierarchy having occurred to date rather than any successful enactments of deconstruction.

Rorty's probing of the foundational claims of epistemology by revealing the dominant position of ocular metaphors in traditional philosophy, on the other hand, is particularly relevant to architecture. His critique of the spectatorial, mirroring relationship between subject and object in traditional conceptions of knowledge brings into question the nature of architecture's mode of reception. It has been argued that the spectatorial, ocular metaphors have been maintained in the populism of Robert Venturi and the post structuralism of Peter Eisenman—evident in their limiting of architecture to a sign which represents rather than an ontological and experientially grounded 'thing.'

Rorty illustrates the link between ocular metaphors and the traditional foundational claims of philosophy and introduces his conception of a philosophy "without mirrors,"³⁹ a conversational, 'edifying' philosophy. This too calls into question the relationship between theory and practice within architecture, as linguistic innovations colonise architectural theories and build a foundation which practice represents. This process more often than not closes off the conversation, resisting a dialogue between architecture and these critical theories, denying any understanding of their relationship to the specific discipline of architecture by performing a simple, metaphoric transfer—a 'mirroring' of current epistemological theory.

Rorty's critique of the position of ocular metaphors in creating a foundation anchoring traditional Western conceptions of rationality has the potential to raise several questions in architectural discourse—the dominance of visual, spectatorial metaphors implicit in our conception of architecture's mode of reception, and the acceptance of the false construct of

the subject/object dichotomy in our approaches to built form, historical influences and the role of theory. But while Rorty provides a sustained critique of some of these accepted preconceptions his relativistic finale—with edifying, conversational philosophy merely being a therapeutic alternative to traditional systematic philosophy—is limited in informing future directions and applications of theoretical discourses.

Gadamer, however, through his development of the metaphor of play and the workings of the hermeneutical circle, develops the notion of an edifying, dialogical relationship between theory and practice, not as a therapeutic alternative, but as a fundamental reality of how we operate and communicate anyway when we distance ourselves from the methodological self consciousness of foundational theories into the realm of everyday practice. Gadamer's 'play' moves from the spectatorial subject/object metaphor to a more inclusive, to and fro, experiential and historically located understanding of communication and the happening of meaning. Working from within the ontological limits of our human finitude, then, Gadamer develops an equally powerful critique of objectivism and notions of foundationalism without falling prey to relativistic conclusions evident in Rorty and many of the French post-structuralists. And while this may lead to claims of conservatism, denying the kinds of changes outlined by Baudrillard in the introduction, Gadamer's claim that "we are in a state of constant overstimulation of our historical consciousness"⁴⁰ is equally valid as a response to the French post structuralists and their followers in architecture. Furthermore, Gadamer's hermeneutics is not as susceptible as Derrida's deconstructive strategies (reversal, displacement, trace) are to a reductive, formally driven reconfiguration of the architectural object. There can be no formal or aesthetic mask that masquerades as a representation of hermeneutics. Instead, Gadamer's theories probe architecture's own assumptions about the nature of communication and the acquiring of meaning, the relationship between the individual and the historical tradition, and the relationship

between theory and practice—the moment of application.

And so it is that “play is the clue to ontological explanation.” For while all three thinkers discussed provide powerful critiques of traditional philosophy’s ‘pure concepts’ as foundations to our actions and everyday practices, it is Gadamer that provides some sense of a move beyond the extreme swings between objectivism and relativism in architectural discourse and practice. For Gadamer’s hermeneutics is both grounded and liberating, that is, grounded in the ontological, temporal, experiential reality and the very human finitude around which architecture revolves and yet liberating in its alternative metaphors that go beyond the reductive constructs of traditional rationality. The hermeneutic metaphor of play does not attempt to close off our desire for a meaningful and communicative architecture, it simply opens the door for a more inclusive understanding of the position of architecture in the context of our very being-in-the-world.

Notes

¹ Ricoeur cited in K. Frampton, “Intimations of Tacitly: Excerpts from a Fragmentary Polemic,” in Pierson, M.(ed), *Architecture and Body*, Rizzoli, New York, 1988.

² M. Johnson, *The Body in the Mind*, University of Chicago Press, Chicago, 1988, p.202.

³ H. Foster, *Recodings—Art, Spectacle, Cultural Politics*, Bay Press, Seattle, 1985, p.128.

⁴ F. Jameson, “Postmodernism and Consumer Society,” in H. Forster, *The Anti Aesthetic: Essays on Post Modern Culture*, Bay Press, Washington, 1987, p.125.

⁵ *Ibid.*, p.125.

⁶ L. Grosz, “Derrida, Irigaray and Deconstruction,” *Intervention* Vol 20, 1986, p.73.

⁷ *Ibid.*, p.73.

⁸ D. Martin, “Architecture and Deconstruction,” Unpublished Advanced Study Report, University of Sydney, 1988, p.36.

⁹ Derrida cited in *ibid.*, p 39.

¹⁰ Grosz, *op. cit.*, p.73.

¹¹ *Ibid.*, p.74.

¹² Heidegger cited in M. Wigley, “The Translation of Architecture, the Production of Babel” *Assemblage* 8, p.16.

¹³ *Ibid.*, p.16.

¹⁴ A. Huyssen, “Mapping the Post Modern,” *New German Critique* 33, p.40.

¹⁵ *Ibid.*, p.44.

¹⁶ *Ibid.*, p.38.

¹⁷ P. Eisenman, “Blue Line Text,” *A+U*, January 1990, p.101.

¹⁸ T. Ando, “Peter Eisenman: Releasing Time Imprisoned in Space,” *A+U*, January 1990, p.111.

¹⁹ R. Bernstein, *Beyond Objectivism and Relativism*, Basil Blackwell, Oxford, 1983, p.181.

²⁰ R. Rorty, *Philosophy and the Mirror of Nature*, Basil Blackwell, Oxford, 1980, p.7.

²¹ *Ibid.*, p.12.

²² *Ibid.*, pp.3-4.

²³ *Ibid.*, p.3.

²⁴ Heidegger cited in H.-G. Gadamer, (Linge, T., trans.), *Philosophical Hermeneutics*, University of California Press, Berkeley, 1976, p.1.

²⁵ *Ibid.*, p.360.

²⁶ *Ibid.*, p.367.

²⁷ *Ibid.*, p.370.

²⁸ Benjamin cited in L. Lerup, “At the End of the Architectural Promenade,” in Pierson, M. (ed), *op cit.*

²⁹ J. Hans, “Hermeneutics, Play, Deconstruction,” *Philosophy Today* 24, 1980, p.301.

³⁰ Bernstein, *op. cit.*, p.165.

³¹ *Ibid.*, p.165.

³² Gadamer cited in Linge, D. (trans.), *op. cit.*, p.li.

³³ Gadamer, H.-G., *Truth and Method*, Sheed and Ward, London, 1975, p.xiii.

³⁴ Bernstein, *op. cit.*, p.36.

³⁵ Gadamer, *op. cit.* (1975), pp.91-114.

³⁶ This polemical argument against the Enlightenment’s reaction to tradition is developed in Gadamer, *op. cit.* (1975), pp.241-245.

³⁷ Gadamer cited in Hans, *op. cit.*, p.302.

³⁸ Bernstein, *op. cit.*, p.130.

³⁹ Rorty, *op. cit.*, pp.357-395.

⁴⁰ Gadamer, *op. cit.* (1975), p.xiv.

Space and Place

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Heidegger's Modernity

For Heidegger, what we know and our initially and ultimately unchosen worldly existence ('thrownness') can't be separated, but the essential connection between the two can be forgotten. Moreover, this forgetfulness can be institutionalized and embedded in social practices and in formal and informal discourse. It can become a way of being of a culture. In the West the connection *has* progressively been forgotten and in Western modernity the institutionalization of forgetfulness has reached a terminal stage. Since Descartes, the rationality of formalized inquiry has come to be construed exclusively as a mental activity that relates data abstracted from temporally and spatially specific historic or natural events to universal sets of laws at the expense of thoughtful consideration of the constitutive involvements in knowledge of the everyday ongoing worldly activities—the particular time- and space-bound 'situation'—of the knower. Cartesian dualisms—mind/body, subject/object—define the essence of modernity. Theory and theoretically informed practice are exclusively spun out from a single 'self-evident' schema: a de-situated, dis-embodied, dis-located, contemplative subject relating to an object-world through instrumentalized representations.

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The place/space dichotomy has been circulating in architectural conversations and beyond since the early 80s. This paper examines two treatments of it. The first is Martin Heidegger's, the second is Anthony Giddens' modification of Heidegger's. Both read the problematics of place and space in relation to conditions of modernity and as a vital issue for modernity.

For Heidegger, 'homelessness' (placelessness) is a consequence/cause of developments in the the life-world of Western modernity. 'Homelessness' is an existential disconnectedness that is embedded so deeply in the languages, practices and material infrastructures of modernity that its eradication is an impossibility. He reads modernity's fundamental commitment to an abstract spatio-temporality as a fatal decline from pre-modernity whose forms of life were grounded in locale-specific spatio-temporalities.

For Giddens, place, under conditions of late modernity, has become a phantasmic symbolic token for circulation in the ab-

Given the success of this schema Heidegger can hardly deny that it is a mode of being in the world but he can and does deny its assumed primordiality. In *Being and Time* he wants to show that the deliberative conscious knowing thematized by Descartes presupposes a background of practical preunderstandings. Waking life is an almost unbroken unfolding of concerns and practices which do not require a detached mindful self-supervision. Everyday knowing is a rupture in our pre-conscious involvements, a rupture triggered by disturbances in our equipmental milieu: rooms, furniture, gadgets, cars, streets and so on. Theoretical contemplation is an institutionalized prolongation of this de-

tract spatio-temporal systems that now ground everyday ontological security. For Giddens, modernity is an unpredictable 'juggernaut' that yields oppressions and benefits. The ontological security lost when place becomes phantasmic is supplied in new ways by the systems that cause that loss. Giddens argues, in an implicit critique of Heidegger, that we can safely let go of our attachments to pre-modern conceptions of place. Indeed we need to recognize it as a phantasm in order effectively to cope with the historic moment.

It is claimed here that Giddens' cautious optimism is derived in part from Hans-Georg Gadamer's own modifications of Heidegger's position. While Gadamer does not deal explicitly with space and place, he is concerned with the conditions appropriate to non-oppressive forms of human solidarity. These conditions persist in modernity, not as survivals of pre-modern forms of life, but in a linguistically mediated *sensus communis*.

achment and an exploration of the world disclosed by disturbance. But the world disclosed to theory is not that of our absorbed everyday involvement. Rather it is a represented world constituted by dislocation and detachment. Heidegger says our equipmental milieu thus has two ways of showing up for us: as transparent unrepresented ready-to-handness or availability to our concerned and purposive involvements, and as the visible occurrent present-to-handness of problematic things in themselves 'out there'. The second is derivative of the first but this derivativeness can be overlooked. Institutionalized theory institutionalizes this oversight.

Spatiality

In displacing the detached knowing mind from centre stage Heidegger is not attempting to install the body in its place. Our absorbed involvements cannot be reduced to biological reflexes or to bodily schemata imprinted neurologically through repeated collisions with things¹. Heidegger says that we are bodily not in order to invert the Cartesian mind-body split but to get beyond it. In our pretheoretical involvements our being is invested in constantly shifting regions of concern that cannot be reduced either to 'mental' ideas or beliefs or to a biological program. Our absorbed being-in-the-world thus has a lived spatiality of places and regions whose immeasurable dimensions—'nearnesses' and 'farnesses'—are a function of our immediate concerns as these mesh with our equipmental milieu. Neurological imprinting or enculturated systems of ideas would be hard put to it to explain the lived spatiality of watching a TV, or reading a book, or, to use Heidegger's example, making something in a workshop. Lived spatiality is not that of equipment nor of a body nor of a socialized mind but emerges through a temporally unfolding nexus of involvements.

The spatiality of present-to-handness is of a different order. When the TV plays up the spatiality of absorption vanishes and a different spatiality emerges. We look at it as an object detached from us and 'in' but separate from its surrounds, and as an object with discernable and representable properties. Heidegger says that it is this order of spatiality—of us as thinking subjects looking at things dispersed in space—that is thematized and explored in depth by theoretical detachment. Theoretical detachment assumes the objectness of things 'in' space and 'in' time, where space and time are abstract, universal, continuous, measurable containers of events and objects.

Neither everyday knowing nor theoretical knowing remain abstracted from the physical milieu. The craftsperson in a workshop overcomes the problem of an inappropriate tool by fixing it or making a new one. The TV maintenance worker consults manuals written by electronics

experts and feeds this knowledge back into the equipment. In both cases the smoothing out of disturbance involves the embodiment in equipment of 'ways of seeing'.² The making of equipment even more so.

But Heidegger sees a crucial difference between the situations of the craftsperson and the TV worker. The former is involved in a *local* practice-knowing-equipment cycle. Problematic disturbances in equipment in the workshop disclose a present-to-hand spatiality that retains an essential connection to local concerns: things are 'lost', 'out of reach', 'awkwardly shaped for this job' and so on. These interpretations are non-generalizable. They only make sense in relation to what is of immediate concern to the craftsperson. Smoothing out disturbances feeds these locale-specific interpretations back into the world of the workshop. The circuit plans of the TV manual are grounded on a theoretical spatio-temporality that has been torn free of locale-specificity. They work as well in the Black Forest as in Berlin. The TV worker is involved in a dis-located practice-knowing-equipment cycle, a cycle in which equipment embodies the universal spatio-temporality of theoretical detachment.

Big Science

For Heidegger, the difference between the situations of the craftsperson and the industrial worker is an index of the changes rung in in the West's headlong plunge into modernity, changes which see the locale-specific sufficiencies and securities of pre-modern practices replaced by the dislocated and dislocating practice-equipment systems of modern technology. These changes emerge as explicit themes in Heidegger's post-*Being and Time* writings. In 'The Age of the World Picture' he writes that the operations of institutionalized academic science manifest processes that are the essence of modernity itself.

In science the spatio-temporality of the present-to-hand shows up as the 'ground plan [Grundriss] of nature' which Heidegger describes as a 'self-contained system of motion of units of mass related spatiotemporally'. He gives us the following snapshot of it.

Motion means change of place. No motion or direction of motion is superior to any other. Every place is equal to every other. No point in time has preference over any other. Every force is defined according to—i.e., is only—its consequences in motion, and that means in magnitude of change of place in the unity of time.³

The ground plan operates as 'prior stipulation', as a predictive way of seeing that tends to self-reproduce through cyclic linkages of mutual dependence among thinking, practice and equipment. The ground plan of nature gets embodied in extended networks of equipment which require for their support a matrix of administrative, economic and distributive practices, or 'ongoing activities'. Thus, investment in machinery is at once investment in a way of seeing and in an institutionalized conduct of life. Moreover the instrumentation, as a way of seeing, can only reproduce variants of the ground plan in ever more useful and refined ways, variants which themselves get re-embodied in practico-instrumental networks. Thus the ground plan, its instrumentation, and its supportive practical matrix of ongoing activities are wrapped up in a self-perpetuating system that has, Heidegger claims, an unstoppable momentum. The cyclic relay between knowing, equipment and doing operates in modern science as in the workshop but with the fateful difference that it is grounded on a universal spatio-temporality. Modern science breaks free of the limits of locality. All it wants to do is more of the same but on a bigger and bigger scale.

For Heidegger, the eye-instrument-world framework of science is a permutation of the subject-representation-object schema which grounds all thinking and practice in modernity. Just as in science where the instrumentally embodied ground plan sets up a portion of the real for its assimilation into the knowledge-practice-equipment economy of science so in culture at large the thinking-practice-equipmental cycle projects and assimilates the natural and human worlds as constant, objective accessibility.

Heidegger calls this constant accessibility 'standing reserve',⁴ by which he means that under conditions of modernity the design and construction or production of equipment presupposes the co-ordination of a multiplicity of practical equipmental networks across time and across space. One TV set, for example, is embedded in manufacturing systems, broadcast systems, maintenance systems, legislative systems, management systems, distribution systems, research systems, labour systems and financial systems. All are linked in relations of mutual dependency within a necessarily context-independent spatio-temporality. In 'The Question Concerning Technology' Heidegger provides the following example.

The forester who in the wood measures the felled timber and to all appearances walks the same forest path in the same way as did his grandfather is today commanded by profit-making in the lumber industry, whether he knows it or not. He is made subordinate to the orderability of cellulose, which for its part is challenged forth by the need for paper, which is then delivered to newspapers and illustrated magazines. The latter, in their turn, set public opinion to swallowing what is printed, so that a set configuration of opinion becomes available on demand.⁵

Whether the forester or the reading public know it or not a network of systems has penetrated their life-world with the result that remoteness of the forester to the reader and of the reader to the forester has been replaced by a systematic exploitable co-accessibility. Both are loci of production and consumption in the same space-time field. For Heidegger, this technologically mediated integration of the forester and urban public opinion (and all points in between) presupposes the spatio-temporality of present-to-handness. Moreover, as in science, the techno-systems of production and consumption tend to reproduce and extend the spatio-temporality in which they are grounded.

All distances in time and space are shrinking. Man ... now receives instant information, by radio, of events which he formerly learned about only years later, if at all. The germination and growth of plants, which remained hidden throughout the seasons, is now exhibited publicly in a minute, on film. Distant sites of the most ancient cultures are shown on film as if they stood this very moment amidst today's street traffic. Moreover, the film attests to what it shows by presenting also the camera and its operators at work. The peak of this abolition of every possibility of remoteness is reached by television, which will soon pervade the whole machinery of communication.⁶

Heidegger sees an uncontrollable process of integration and domination whose avant garde is an instrumentally embodied eye. On the macroscopic scale temporally and spatially distant places are made present and instantly accessible for consumption via TV, radio and film as culture, or as resources for industry, or for incorporation as data into institutions of knowing. On the microscopic scale imaging technologies peer into and colonize previously inaccessible sub-atomic and sub-cellular domains and open them up for technological intervention. Heidegger warns that because the systems of modernity have no in-built self-regulating mechanisms their development tends towards a catastrophic global envelopment and consumption.

No Exit

But who is he warning? For Heidegger subjects are not caught up in these self-producing processes of modernity against their wills but are constituted by them. Modernity reproduces itself through its subjects. For Heidegger the essential medium of concept formation is language but its occasion is the cyclic relay between absorbed practices and everyday detached knowing. In modernity both medium and occasion have been infiltrated by variants of subjectivism. Because our everyday physical milieu are increasingly designed to suit the requirements of modern systems

we encounter the world and Nature as constant actual or potential accessibility, even in what are apparently inconsequential events of knowing.

Along with the public world, the environing Nature is discovered and is accessible to everyone. In roads, streets, bridges, our concern discovers Nature as having some definite direction In a clock, account is taken of some definite constellation in the world system. When we make use of the clock-equipment, which is proximally and inconspicuously ready-to-hand, the environing Nature is ready-to-hand along with it.⁷

That is, even our everyday ongoing background practices—such as checking the time—do not so much connect us up to 'world systems' as show that we are always already embedded in them. In late modernity there is no longer any such thing as a locale specific knowing-practice-equipment cycle from which a specifically regional and inherently limited kind of knowing can be developed. Our existential or lived spatiality—the pretheoretical world that provides the occasion and site of concept formation—is suspended within and preformed by the globally extended spatiality of the present-at-hand.

Moreover, on Heidegger's analysis of modernity, the possibility of discursive agreements upon which resistance to the developments of modernity could be based is foreclosed because the very grammar of language is irradiated by subjectivism. That is, because we think, speak and write or interpret ourselves, others and the world in categories supplied by discourses spun out from the subject-object schema there can be no discourse on modernity that is not complicit with its developments. Heidegger writes that only a god can save us now.

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It is against this background that Heidegger meditates on the distinction between *Raum* (place) and *spatio* (space) in 'Building Dwelling Thinking'. In this essay Heidegger draws our attention to the post-war housing shortage but contends that 'the real

plight of dwelling does not lie merely in a lack of houses, ... is indeed older than the world wars with their destruction, older also than the increase of the earth's population and the condition of the industrial workers.⁸ For Heidegger, actual destitution is symptomatic of a pervasive and deep existential 'homelessness' that determines the forms of life of the entire culture. The plight of dwelling in modernity is the all but complete replacement of the locale-specific sufficiencies and securities of pre-modern practices by the dislocated and dislocating practice-equipment systems of modern technology, that is, of Raum by spatio. The forester is on the way to homelessness by virtue of the imperceptible infiltration of his life world by the integrated systems and spatio-temporality of modernity. His path is not the path his grandfather trod even though it is the same path ontically. He is being dis-located. The city dwellers who 'swallow' illustrated magazines are already there. Homelessness is the rift implied in the groundplan of nature [Grundriss, riss=plan=rift]. Twentieth century homelessness was predestined for us when Descartes mistook the certain objective knowledge for a palliative for ontological insecurity and so dislocated and desituated knowing from worldly doing.

The message of 'Building Dwelling Thinking' is not a practical one but a thoughtful one. It is to be read as an indication of our entanglement in the systems of modernity and not as a cryptic instruction manual on how to get out of them. You cannot design or not design for Raum. Even to contemplate such a thing is to begin to lift Raum into the abstract representational systems of modernity. Nor can we moderns forage around among premodern enclaves within modernity or traditional societies for helpful hints on how to dwell authentically, as some interpreters of Heidegger have suggested⁹. Nostalgia isn't an option. There can be no

mere negating of the age. The flight into tradition, out of a combination of humility and presumption, can bring about nothing in itself other than self-deception

and blindness in relation to the historic moment.¹⁰

Heidegger's account of the historic moment thus appears to present us with an untenable but inescapable modernity in which even discursive agreement on its nature is fatally compromised. He uses certain pre-modern life practices such as those of the closed workplaces of the workshop or the forester as exemplary grounded forms of life but at the same time suggests that the preservation and/or recovery of these is impossible.

For the remainder of this paper I want to briefly consider two developments of Heidegger's work—Hans-Georg Gadamer's and Anthony Giddens'. Both take seriously his analysis of modernity but both modify his no exit conclusion.

Gadamer's Modernity "little reason"

Nodding respectfully towards Heidegger's picture of modernity, Gadamer writes that,

it certainly looks at first as if we are being overwhelmed in our economic and social system by a rationalization of all the relations of life that follows an imminent structural compulsion so that we are always making new inventions, and we are always increasing the range of our technical activity without being able to see our way out of this vicious circle. Far-seeing people already consider this a fatal path down which humanity is heading. *But there are other common experiences in this society atomized by the pursuit of profits. In the light of these experiences everyone can become expressly aware of the limits of manipulative capacities.*¹¹[my italics]

Modernity's vicious cycle is no less a reality for Gadamer than it is for Heidegger but for Gadamer there are ways of coping with it which Heidegger overlooks. We've noted that for Heidegger common experiences can no longer be lifted up into discursive interpretation in such a way that we who experience them can get the kind of collective grip on the

'fatal path' necessary to get off it. Language tells us we are object-resources for other people, and that other people are our objects and our practices and equipmental milieu reinforce this. Because there are no other words, practices or milieux than the ones we've got we are caught in processes that precludes the development of a salvational consciousness.

But for Gadamer there is always the possibility of common agreement on common experiences or problems as the following examples indicate.

- 1 Gadamer writes of the 'shock wave that went through the world ... when the possibilities of genetic engineering entered the public arena.'¹² Clearly, for him, the most shocking of genetic engineering's possibilities is the design and *in vitro* manufacture of human beings, where 'design' means first an ontic representation of human life and second a manipulation at a sub-cellular level and where the resultant human being would be ontically pre-programmed from the word go. Heidegger would, no doubt, have felt the same shock. There can be no *in vitro* hermeneutic circles, no authentic replicants anxious about their own mortality. But Gadamer's point is that the shock and the discursive 'wave that went around the world' is itself evidence of a collective ability to discursively represent the problem and of a collective ability to agree to set limits. Such an agreement need make no reference to scientific data or to founded objective knowledge. Rather, it would be an instance of practical wisdom.
- 2 In the second example Gadamer considerably softens Heidegger's claim that scientific representations only serve to keep us on the 'fatal path'. He is quite convinced that we are living in an age where life gets reduced to numbers and fed into computers for the purposes of manipulation and anonymous planning, that is, that 'we live in the age of cybernetics, of self-regulative systems'.¹³ But he adds that 'In virtue of the scientific enlightenment of our day we are starting to learn that there are

equilibrium conditions and equilibrium states that need to be maintained', a reference to 'the closed work place of the earth' and its 'ecological crisis'.¹⁴ So, by a ruse of history, a saving word—'maintain equilibrium states!'—comes from scientific discourse itself. Cybernetic representations of equilibrium states and self regulating systems provide not only a compelling demonstration of the need for ecological care but a useful analytic tool for figuring out appropriate interventions where systems have been pushed out of balance.

The first example indicates the possibility of collective agreement without resort to a founded and grounded knowledge, that is, without resort to the science-dominated¹⁵ knowledge systems of modernity. The second indicates the possible use of scientific representations against the purportedly inexorable tendencies of the 'fatal path'. For Gadamer, both point to a interpretative free-play in situations where individuals 'interface' with the institutions and knowledge and image systems of modernity. It is this realm of free play that forms the basis of a resistant solidarity.

For Gadamer, there is in every act of appropriation—whether it be of a book, a film, an oil painting, the other half of a conversation, a TV program, a computer print-out etc—an area of indeterminacy, which, precisely because it is indeterminate, evades final description and incorporation into a system of knowing and planning. No one can say with any finality what happens in the crucial minute, second by second appropriations of tradition that occurs in the reading of a book or poem, or in a viewing of L.A. Law, or in a conversation and this means that concept formation in the final instance can and does sneak out from under what Heidegger sees as a total manipulation of concept formation.

This realm of play is not, however, the manipulable skill or capacity of a subject. Rather it belongs to the natural language in which and through which subjects become subjects. For Gadamer socialization is primarily linguistic: language acquisition is acquisition of preschematizations in

terms of which the world and our selves are revealed. On his view modernity is characterized by attempts at distantiating from the language-world through the objectification of language as manipulable systems of univocal representation. Western modernity sees the proliferation of technical languages and their subject-object preschematizations and their descent into and organization of social practice. But technical languages cannot, Gadamer argues, survive without the natural languages from which they derive and which live off metaphorical slippage.¹⁶ All speakers of a language 'have'—in a way that is not meant to imply subjective possession—this 'slippage' which allows them to figure their situations in ways unpredictable to a scientific logic. Gadamer calls this 'the "little reason" of human beings'.¹⁷ While 'little reason' might not save the individual speaker from the impositions of modernity it does save the culture. In fact, it is only by metaphorical slippage that the idea of 'equilibrium states' can be thought to be a possibly useful tool for coping with as yet unforeseen situations. 'Equilibrium states' is an element from a scientific vocabulary, but its projection into the unknown—its metaphorical projection—does not follow the rigours of scientific reason but the wiles of practical wisdom. For Gadamer, a ruse of history occurs when a metaphor slips and that is happening all the time, as we speak and listen.

Thus Gadamer writes that he

tried to overcome Heidegger's perspective according to which we do not get out of the language of metaphysics¹⁸ because the grammar of our languages binds our thought to it ... and I have shown the way a communal language is shaped in [the interchange of dialogue] beyond the explicit awareness of the individual speaker and how a step by step unveiling of being comes about in this way.¹⁹

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For Heidegger, human and non-human being is unveiled almost without exception as the actual or potential accessibility of objects to one or another of the systems of moder-

nity. Human being is deprived of its ontological security when it is so revealed. Homelessness is his name for the ontological insecurity of modernity. For Gadamer homelessness is the tendency of modernity but it is ultimately an unrealizable tendency. The unpredictable unveilings of being by 'little reason'—collective practical wisdom and individual appropriations—precede and evade all predictive judgements, whether they be those of the integrated systems of modernity or Heidegger's.²⁰ For Gadamer, all the sites of interpretation, whatever their spatial and temporal location, are potential homes for interpreters (i.e., everybody). Gadamer displaces place from its pre-modern settings and distributes it to wherever language is spoken.

Giddens' Modernity

Following Heidegger's suggestions, Giddens sees the shift from pre-modernity to modernity as a process of space-time distantiating.²¹ The general context of pre-modernity was characterized by the 'overriding importance of localized trust'.²² Kinship patterns stabilized social ties in localized space-time contexts and rarely extended beyond those contexts. Thus the local community as both a physical and a social place provided sufficient familiarity for the development of personal and collective stability. Moreover, traditional societies saw the past as that which is repeated in the present and the future. Time was local and cyclic. By contrast the general context of late modernity is characterized by the investment of trust relations in disembedded abstract systems which now stabilize social relations across indefinite spans of space-time. Socially and spatially mobile personal relationships of friendship or sexual intimacy replace socially and spatially embedded kinship patterns as a means of stabilizing social ties. Finally, late-modernity relates to the past as that which is overcome in the present in order to get to a new future. Time is an evolutionary line on which the past gets left behind.²³

Abstract systems—knowledge/practice/equipment networks—are the centrepiece of Giddens' analysis. For him, the peculiarly modern sepa-

ration of place from space is the precondition and result of the globalizing development and progressive integration of abstract systems which effectively 'dis-place' the ontological security which in pre-modern times was derived from almost exclusively local involvements and re-embed it in relations of trust in and reliance on people, things and processes that are spatially and temporally absent. He writes that while

many aspects of life in local contexts continue to have a familiarity and ease to them, grounded in day-to-day routines individuals follow ... [this] sense of the familiar ... so important to a sense of ontological security ... is one often mediated by time-space distantiation.²⁴

That is, even in some of our most basic routines our familiarities with others and the world are mediated, and so displaced from local contexts, by abstract systems. Among these Giddens includes

- money;
- formal, institutionalised modes of reflection;
- media systems: telephones, TV, print media, radio, film;
- cybernetic systems;
- surveillance systems;
- administrative and bureaucratic systems;
- expert systems, or professional systems of knowledge such as architecture, law, medicine.

Quite clearly none of these systems is independent of the others. Late modernity sees their progressive integration such that their coverage of social, physical and theoretical space tends towards universality. As a whole they constitute a 'juggernaut' which like Heidegger's vicious circle has no 'outside' and so allows no escape. All presuppose and reproduce a distantiated spatio-temporality with the result that

place becomes increasingly phantasmagoric: that is to say, locales are thoroughly penetrated by and shaped in terms of social influences quite distant from them. What structures the locale is

not simply that which is present on the scene; the 'visible form' of the locale conceals the distantiated relations which determine its nature.²⁵

But Giddens rejects Heidegger's conclusion that the experience of modernity is entirely negative. While he agrees with Heidegger that our unchosen thrownness is a thrownness among abstract systems, he does not think this is necessarily a cause for regret. With Heidegger he urges that we recognize the 'historic moment' but unlike Heidegger he does not see the historic moment of late modernity as a descent from pre-modernity but as a horizontal shift away from it. Giddens' modernity entails the dangers predicted by Heidegger and benefits and processes he did not predict.

The reasons for Giddens' cautious optimism are as follows.

1 Giddens accepts Heidegger's and Gadamer's hermeneutical insight into the involvements of theory in its objects and its consequence that there can be no theory-led (or other) extrication from modernity and its processes. He argues that a 'reflexive sociology' must acknowledge an inescapable complicity with what it represents as theory. But Giddens' understanding of this constituting/constituted involvement of theory in the processes of modernity recalls Gadamer's 'little reason' rather than late Heidegger's view of modernity as the total manipulation of concept formation. Where Heidegger thinks new knowledge keeps modernity on track Giddens thinks 'new knowledge (concepts, theories, findings) [of] the social world ... alters its nature, spinning it off in novel directions.'²⁶ Like Gadamer, Giddens sees a consequential realm of appropriative play in theoretical interpretation—consequential precisely because theory doesn't float free of the world but is always in it as a co-determinant in the shaping of the material and social environment. For Giddens, concept formation in modernity is not independent of the conditions of modernity but nor is it enslaved by those conditions.

2 What applies to theoretical interpretation applies also to everyday interpretation. The thorough embedding of individuals in the abstract systems of modernity does not imply their domination by them. Heidegger thinks individuals 'swallow' magazines and become what they ingest, that media, for example, construct their audiences. Gadamer and Giddens think that they do construct their audiences but not all the way down. Appropriative play—or 'poaching' as Michel de Certeau calls it²⁷—operates when people watch TV,²⁸ spin out their pedestrian narratives in city streets, cook, read, decipher computer print outs, that is, wherever language is. Gadamer writes (with Heidegger in mind) that it is a 'terrible intellectual hubris to equate ... the ideological confusions of the present with life as it is actually lived with its own forms of solidarity'.²⁹ It is just as much an intellectual hubris—and a closely related one—to see subjects as totally passive constructs.

3 The technical knowledge and instrument systems of modernity themselves create positive opportunities unforeseen in pre- or early modernity. John B Thompson notes in his discussion of the 'mediation of modern culture' that while

the scheduling of particular programmes may determine the way in which individuals organize the temporal flow of their activities in the course of an evening, a day or a week ... the deployment of technical media can [beneficially] transform the life conditions of recipients... For it enables individuals to experience events which take place in locales that are spatially and temporally remote, and this experience may in turn inform or stimulate forms of action or response on the part of recipients, including forms of collective or concerted action. The reception of mediated events greatly expands the range of possible experience to which individuals are, in principle, exposed.³⁰

In short, shock waves that go around the world go around it as electronic impulses. For Heidegger such electronically mediated associations and conversations would have been an indicator of the final dissolution of place. For Giddens and Gadamer it is evidence of a *sensus communis* upon which security, solidarity and collective agreement are based.

One might add here that the mediatized dispersal of ideas and the replacement of kinship patterns with displaced or displaceable personal ties was the occasion, if not for the thought of feminism, then for the dissemination of that thought and its practice. For Giddens life politics and emancipatory politics are at once responses to certain conditions of modernity and enabled by others.

It is important to note that in outlining these and other opportunities within modernity Giddens is not attempting an apology for modernity. Possibilities for ontological security—for the development of trust relations in and through the systems of modernity—are far from being evenly distributed. Indeed, the well-being of one locale is frequently achieved at the cost of its deprivation in other spatially and temporally distant ones. But it is now a task for theory and not for a Heideggerian meditation on the possibilities/impossibilities of 'place' to trace patterns of distribution of securities and insecurities and to develop alternatives and interventions. A pursuit of pre-modern conceptions of Raum would at best be indifferent to this theoretical task and at worst an inhibition of it.

Notes

¹ I am thinking here of Christian Norberg Schulz who suggests that Heidegger points the way to a restoration of a sense of place in architecturally designed settings through a reconsideration of 'bodily schemata' that have been forgotten under the empire of disembodied reason. Norberg Schulz, *Genius Loci*, Rizzoli, NY, 1980.

² I get the phrase 'ways of seeing' from Don Ihde's discussion of Heidegger in *Ihde's Instrumental Realism*, Indiana University Press, Bloomington, 1991. The discussion of Heidegger in this paper relies heavily on Ihde's work and on Hubert

Dreyfus, *Being-in-the-world*, MIT Press, Cambridge, Mass., 1991.

³ Martin Heidegger, 'The Age of the World Picture' in *The Question Concerning Technology*, trans. William Lovitt, Harper, 1977, p.119.

⁴ Martin Heidegger, 'The Question Concerning Technology' in *The Question Concerning Technology and Other Essays* trans. William Lovitt, Harper, 1977, p.17.

⁵ Heidegger, *Question*, p.18.

⁶ Martin Heidegger, *Poetry, Language, Thought*, trans. Albert Hofstadter, Harper Colophon, San Francisco, 1975, p.165.

⁷ Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson, Blackwell, Oxford, 1988, pp.166-181.

⁸ Martin Heidegger, 'Building Dwelling Thinking' in *Poetry, Language, Thought*, trans. Albert Hofstadter, Harper, 1971, p.161.

⁹ Norberg Schulz's examples of places are almost exclusively culled from pre-modern enclaves in the West and from non-Western societies. Norberg Schulz's text operates on a lapsarian schema: modernity is a Fall from an original human-Nature oneness. When this combines with his misunderstanding of Heidegger's work as a body-phenomenology what results is a peculiarly disabling stance in relation to what Heidegger calls the 'historic moment'.

¹⁰ 'The Age of the World Picture', p.136.

¹¹ Hans-Georg Gadamer, *Reason in the Age of Science*, trans., Frederick G. Lawrence, MIT Press, 1981, p.83.

¹² *Reason in the Age of Science*, p.83.

¹³ *Ibid.*, p.84. The full sentence reads: We are finally no longer living in the machine age with its huge extended arm, but we live in the age of cybernetics ...

Much of Heidegger's critique of modernity centres on the paradigm of the machine. Here Gadamer seems to be locating and relativizing Heidegger's critique as specific to that age which has now been replaced by one for which cybernetics is the paradigm.

¹⁴ *Reason in the Age of Science*, p.84.

¹⁵ Gadamer writes that The scientific tendencies of thought underlying our civilization have in our time pervaded all aspects of social praxis. Scientific market research, sci-

entific warfare, scientific diplomacy, scientific rearing of the younger generation, scientific leadership of people—the application of science to all these fields gives expertise a commanding position in the economy and society.

'Notes on Planning for the Future', *Daedalus* 95, 1966, p.572.

¹⁶ Gadamer speaks of language's 'fundamental metaphorical nature' and adds that 'it is the prejudice of a theory of logic that is alien to language if the metaphorical use of a word is regarded as not its real sense.' *Truth and Method*, p.389.

¹⁷ *Reason in the Age of Science*, p.58. Gadamer borrows the phrase 'little reason' from Nietzsche's.

¹⁸ Gadamer and Heidegger agree that modern subjectivism is a permutation of metaphysics.

¹⁹ *Reason in The Age of Science*, p.56-57.

²⁰ This is not to say that Gadamer thinks everything is going to be ok. For his view of modernity see his 'Notes on Planning for the Future', *Daedalus* 96 (1966), pp.573-589.

²¹ See Anthony Giddens, *Social Theory and Modern Sociology*, Polity, Cambridge, 1987, Chapter 6: Time and Social Organization, where Giddens acknowledges his debt to Heidegger.

²² Anthony Giddens, *The Consequences of Modernity*, Polity, Cambridge, 1991, p.102.

²³ For Gadamer and Heidegger the modern philosophical tradition of overcoming tradition was inaugurated by Descartes' negation of tradition as burdensome prejudice. Giddens' comments echo their view. See his comments, *Consequences*, pp.45-53.

²⁴ Giddens, p.140.

²⁵ Giddens, *Consequences*, p.18-19.

²⁶ *Consequences*, p.153.

²⁷ Michel de Certeau, *The Practice of Everyday Life*, trans., Steven Rendall, University of California Press, Berkeley, 1985.

²⁸ John B Thompson, *Ideology and Modern Culture*, Polity, Cambridge, 1990, p.17.

²⁹ 'Letter to Bernstein' in Richard Bernstein, *Beyond Objectivism and Relativism*, Blackwell, Oxford, 1983, p.262.

³⁰ Thompson, *Ideology*, pp.314-319.

Inconspicuous Architecture

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The profession of architecture is currently the subject of heavy and very public criticism.¹ Criticism has focussed both on the quality of the environments that have been created by architects and on the apparent defensiveness of the profession in the face of public opinion. The buildings so criticised² are “Frankenstein monsters, devoid of character, alien and largely unloved ... very few people are pleased with the situation.”³

These and other criticisms can be seen as indicative of a more general malaise that is afflicting the professions. The competence of professional practitioners, their accountability and the relevance of the professions are all being brought into question. The community appears *not* to be well served by whatever it is that underlies professionalism. On the one hand the professional is understood as able to take all matters into account and decide and arbitrate independently of personal involvement, much as the scientist is often portrayed. In the case of the architect there is also the overlay of the professional as creative artist whose judgements are to be taken as authoritative by virtue of the professional's access to inner creative energies and sensitivity to the nature of place and space. These two notions of professionalism do not sit comfortably together, and individually they each appear seriously flawed.

As centres for the promotion, transferral and development of pro-

fessional competence, universities are similarly under challenge. It seems they are not measuring up to their self-appointed task as harbingers and promoters of theory, and the builders of knowledge bases from which practice can proceed. In the same way that the professions have not delivered in sorting out the world's problems, blame can be levelled at the universities in not delivering what they promised—the requisite theory. The recent lowering of the prestige of universities gives an indication of this. The malaise in architecture, to which this paper is addressed, may therefore be taken as typical of a more general range of problems that has at its core the false expectations of a misguided epistemology.⁴

The architectural profession has set itself up for the kind of criticism advanced against it. This has occurred in several ways. Having promoted itself as influential in matters pertaining to the built environment the profession is *not* now in a position to sidestep the criticisms and blame developers, corporations, bureaucrats, politicians, property consultants, engineers or planners. Secondly, it is well known that the architectural sciences (acoustics, lighting, energy etc) where they have been successful have not compensated for the creation of generally flawed environments. In fact it can be argued that in many cases the architectural sciences have contributed substantially to the creation of these unsatisfactory environments. Third,

Heidegger's ontology points to the primacy of human experience in our understanding of the world. Our primary mode of being is the undifferentiated realm of the available. Here there is no subject-object distinction. Things are simply there, inconspicuous and available. Other understandings of the world in terms of meaningful objects, theories and sense data are derivative. Much discontent about contemporary architecture can be attributed to the isolation of the design of buildings from the world of the available—a legacy of the ontology of Descartes. The view is presented here that the community is best served by an architecture of the available (“inconspicuous” architecture). This is architecture in which the idea of the decontextualised object, the work of art or the fixed spectacle is subservient to that of buildings as equipment, accommodation or part of a background. A re-orientation from a Cartesian to a Heideggerian ontology has important consequences for the practice of architecture and for architectural education.

it is apparent that the preoccupations of architectural theorists, where they are considered at all by the majority of building users, are regarded as confusing and irrelevant. These preoccupations do not seem to impinge on the creation or assessment of pleasant environments for people. The histories of 20th century architecture are Hegelian.⁵ They are stories of grand movements and hero architects. The debate on architecture is defined by certain architects and theoreticians in terms that mean little to building users.⁶ These terms also serve to confuse and frustrate the ordinary practitioner who feels unable to participate in the forging of new paradigms.

A fourth way in which the architectural profession has been a party to its own demise is the quest for eternal principles, the ability to generate opinions founded on eternal verities. There are the well-known aphorisms that accompany the grand movements ("less is more," "less is a bore," etc), and there are the rules and generalisations, usually about things that are either totally wrong or all right: retaining old facades on new buildings, mimicking the styles of neighbouring buildings, providing an interesting skyline, using local materials. Less glorious than the parading of eternal principals is the often laborious task of working out each case in its own context. By defining the debate in their own rarefied terms, architects as a group have effectively excluded themselves from the concerns of the community and the arena of relevant action—the specific case in the particular context.

These difficulties are well known and have been brought to the attention of the community by various commentators. However, there appears to be a gravitational attraction to certain conceptions of architecture that is difficult to resist. The thesis of this article is that these conceptions of architecture are the result of a particular and deep seated commitment. This commitment is to the scientific ontology of Descartes. It will be shown that many of the difficulties experienced within current architectural practice can be attributed to the Cartesian ontology. There is a way out. The clue lies in the nature of the mismatch itself between the professional ideal and experience. The re-

sponse proposed here is to follow the lead set within certain developments in philosophy and seek to return to *experience* as a basis for reconstructing a view of the place of architecture in the community.

The community response to architecture, the vagaries of day-to-day architectural practice, and the myriad events within the complex of relationships between client, user, authorities, consultants and architects constitute *experience*. There is clearly a serious mismatch between this experience and what is *supposed* to be—the theories, the grand rhetoric and the expectations attached to notions of professionalism. There are several responses to this mismatch. It is possible to hanker continuously after an ideal—to assert that our experience ought to accord with our theories. The theories are normative, and tell us how the world ought to be. A second response is to sustain a cynicism that divorces theory from practice. This involves a kind of double dealing. There is the public face of architectural practice and education and there is the hidden realm in which practitioners "muddle along" through the mire of day-to-day experience. Thirdly, there is a return to the experience and a rethinking of the place of architecture in the light of that experience. It is the latter approach that is advocated and pursued here. In particular, the philosophies of Martin Heidegger⁸ (particularly as recently and lucidly explicated by Hubert Dreyfus⁹) and Hans-Georg Gadamer¹⁰ will be brought to service in invigorating the architectural debate.

Echoing Husserl and Heidegger, Dreyfus remarks that "we must begin with everyday involved phenomena."¹¹ A concern with theory and practice is replaced by *experience* and *reflection* on that experience. This is a recognition that scholarship does not require the development of theories against which we measure our experience.¹² So, heartfelt misgivings by the community about the environments created by architects have to be considered as the result of legitimate experiences, no matter how inadequately they may be expressed in terms of the theories defined by the profession. Shared wants and desires expressed by a community in which there is dialogue displaces the pri-

macy of theory and carefully articulated explanations. The argument to be presented here is that a return to experience generates a philosophical position that makes sense of architecture as an "ordinary," involving and *available* enterprise.

The Rival Ontologies of Descartes and Heidegger

One of the major contributions of the current shift in philosophical thinking (attributable to the slow permeation of ideas put forward by Husserl¹³, pragmatists such as Dewey¹⁴ and reformed positivists such as Wittgenstein¹⁵) can be seen as a return from the legacy of Descartes of esoteric theories removed from human experience. The phenomenology of Husserl advocated a return to the way things appear. More recently, and from a scientific background, Lakoff and Johnson have provided a vivid account of the primacy of experience, particularly bodily-based experience, in how we understand all aspects of human thought, including language, the claims of science to objectivity, and the abstract constructs of logic and mathematics.¹⁶ Accounts of the primacy of experience in biological science are also provided by Maturana and Varela.¹⁷

The experiential account must be contrasted with the Cartesian view. According to the Cartesian ontology¹⁸ we can intellectualise an understanding of the world and our place in it in a hierarchical manner. Following the Cartesian method we begin with the simple, the incontrovertible, and build up a complex picture. Of course the picture may not have originally been derived following this method, but we use the method to reconstruct the picture. The Cartesian ontology begins with the notion that things exist "out there" and we are observing them. Objects exist as comprised of energy and matter. These impinge on the senses. Combinations of atoms result in objects with properties and behaviours. Then follow functions and meanings. So the world and its objects are understood in terms of complex combinations of features. According to Heidegger the Cartesian ontology tells us that "substances become accessible in their 'attributes.'"¹⁹ Every substance has some distinctive

property from which its essence can be "read off."

From this simple understanding have arisen various ontological themes. According to the prominent cognitivist view the mind contains symbolic representations of features.²⁰ For the materialist the story extends to the constitution of the mind. Feelings, emotions and consciousness become epiphenomena of extremely large and complex material systems.²¹ It is considered that the Cartesian ontology can be mapped onto computer programs. The atoms of existence become information units in a data base. Programs and knowledge bases are the means of making inferences to higher level representations. Meanings are derived by inference.

For many this ontology, and its variants, are self evident, beyond dispute and of little intellectual interest. The Cartesian ontology pervades scientifically-oriented societies. It is regarded as hardly worthy of study. But on reflection this ontology can be seen to be bedevilling in various ways.²² As a simple example, the failures of information processing theory and artificial intelligence to account for the rich panoply of human experience provide evidence for the inadequacies of this ontology. The complex seems not to be derivable from the simple. The whole does not emerge from a consideration of the parts. In spite of the elegance of the reductive approach meanings seem to evade the process. If it worked artificial intelligence would then have been at least partly realised. "AI research has called the Cartesian cognitivist's bluff."²³

What of the success of science, the greatest accomplishment arising from the Cartesian ontology? Science can be seen as a particularly fragile and rarefied enterprise in that every attempt is made to suspend the involvement of experience and to turn it into observation.²⁴ Even in science the rules of the subject-object game are under revision, and are possibly at their limits, particularly in the realm of quantum physics, and certainly in the area of understanding human behaviour.

Rather than employ science and the Cartesian ontology to provide a framework for understanding experience, the question is turned around

by Heidegger. Why it is that for our culture certain aspects of human experience (particularly the pursuit of science) persuade us that we are dealing with an objective reality, immutable principles, the essential and irrefutable argument?²⁵ For Heidegger the quest for objective reality, particularly according fundamental status to the idea of the thinking subject attending to the world of objects, represents a kind of "falling."²⁶ It is a legitimate state to be in, but represents a transition from the "primordial" to the derivative.

In countering the Cartesian ontology Heidegger posits an "experientialist"²⁷ account. Of course experience does not exist in a vacuum. Living and relating experience will always be a matter of consensus, discussion and persuasion. The reflection feeds back into the experience. The test for a set of philosophical propositions will always be: is this how it appears? Philosophical propositions will always be subject to change in the light of new reflections.²⁸

It is possible to gain an initial understanding of Heidegger's ontology in terms of levels of experience.²⁹ According to Heidegger our *primary* experience of the world is undifferentiated. We are absorbed. As we engage in our activities things are available. We are unaware: "... we often experience ourselves as active yet are not aware of what we are trying to do."³⁰ Our thoughts are not directed to some end. There are no goals: "... at times one is actually surprised when the task is accomplished, as when one's thoughts are interrupted by one's arrival at the office."³¹ How is it that we are able to cope in this way? Clearly, this coping is "shaped by a vast amount of previous dealings,"³² past experience.

The well known example of this experience of the available is our use of an item of equipment such as a hammer.³³ The most primordial experience we have of a hammer is through its "readiness-to-hand." Readiness-to-hand is not grasped theoretically or by looking at and contemplating the hammer, but by unselfconsciously using it. In this experience the hammer is undifferentiated from ourselves and our world. Similarly, in the mundane activity of walking to the office, we are

unconcerned about the contact between the soles of our feet and the pavement. In the same way the facade of the building in which we work may make no demands upon our attention as we engage in the day to day task of entering the building. In so far as equipment is part of anything we may understand it as part of the "background" to our daily activity. Our own experience of ourselves is similarly that of simply "being-in-the-world."

The spatial terminology of "part" and "in" can be misleading, and Heidegger is at pains to indicate the precise sense in which such terms are used. The "in" of "being in" is not a spatial "in." It is rather the "in" of *involvement*, or of being *in* love.³⁴ The radical aspect of this ontology is that for our day-to-day existence there is no distinction between the thinking subject and the world of objects. The experience of our most primordial state of being is one of undifferentiated involvement. Clearly this observation about human experience is radically at variance with Descartes' ontology that begins with the thinking subject and the incontrovertible primacy of the distinction between subject and object. It is also at variance with Husserl's phenomenological philosophy which asserts the primacy of intentional (goal-directed and purposeful) states within a subject.³⁵

Built upon the experience of the available and at the next level in the ontology is the experience of the meaningful.³⁶ Put more negatively this is the realm of the unavailable, that which we encounter in the event of breakdown of the available. The meaningful is there when we call attention to something.³⁷ We formulate things that are the objects of intentions—when the head drops off the hammer, our feet hurt, the entrance door will not open, or the light catches the facade in an unexpected manner. At this level of experience the hammer is a hammer. It has value, it is heavy, beautiful, practical, cumbersome, blunt and old. It is not a meaningless atomic entity that must be "read off." The hammer *is* immediately. Its identity is tied up with its involvement in an "interconnectedness of equipment" as in the total equipment of the workshop. The idea of projection comes in here. There are certain

expectations about what a hammer is and does. This is not a psychological projection. According to Heidegger we do not "throw a 'signification' over some naked thing which is present-at-hand, we do not stick a value on it."³⁸ The hammer is understood in terms of a totality of involvement. The identification of something as something is an interpretive act, a theme taken up and expanded at length by Gadamer.³⁹ According to Dreyfus this experience of the meaningful involves the "subject with mental content on a nonmental background."⁴⁰

At the next level in Heidegger's ontology we encounter the world of detached theoretical understanding.⁴¹ This is where we stand before something in a detached manner, engaging in theoretical reflection. It is also the realm of the object in science, the object of observation and experimentation. Objects are seen as isolated, and as collections of properties. The context of these objects is artificial, the realm of scientific rules and laws. Things are recontextualised from the everyday to a rarefied and deterministic realm—formal models and scientific theories. Objects are defined in relation to specific purposes. In science and technology this is usually for the purpose of subjugating them to a particular kind of control. So the hammer is seen in terms of properties such as weight and size, our feet on the pavement are seen in terms of physiological and pathological processes, and the building facade is seen in terms of area, light reflectance, colour, construction principles and rules of composition and proportion.

The next level in Heidegger's ontology is that of bare facts, sense data, the most rarefied and abstract understanding possible.⁴² This is the realm of the self-sufficient subject engaged in pure contemplation or perhaps undirected curiosity. It is the most illusive and fragile encounter with the world. It requires appropriating without purpose or prejudice the essential materialness of an object world. The nearest one can come to capturing such an encounter is the CAD data base, but even here the encounter is purpose driven. It is this final derivative and uncontextualised level of being that is the basis of the Cartesian (traditional) ontology to

which Heidegger directs his objections. Dreyfus makes this clear.

Such disinterested attention and the isolated entities it reveals gives rise to traditional ontology—a constantly renewed but unsuccessful attempt to account for everything in terms of some type of ultimate substances on the side of both subject and object. Thus we get the phenomenon mistakenly characterised by traditional philosophy of mind as an isolated, self-contained subject confronting an isolated, self contained, object ...⁴³

These four levels of the *available*, the *meaningful*, *detached theoretical reflection* and *bare facts* are the important components of Heidegger's ontology to which we wish to draw attention here. The details are less important for our purposes than the notion that this philosophy involves us in a fundamental "reversal" of the understanding provided through the Cartesian ontology.

Of course this ontology is prone to serious misunderstandings. An extremely superficial reading of Heidegger's ontology may tempt us to see it as a commentary on human psychology and perception. So in our experience of the *available* we find that as our attention is directed to one thing we find that we cannot attend to the other—perhaps a limitation on our information processing capabilities. As we become familiar with our environment we attend to it less consciously. According to this misreading certainty still rests in the notion of a world out there, an objective reality. We are primarily beings blessed with consciousness and intelligence able to engage in perceptions and actions. One of the points of Heidegger's ontology is that availability precedes scientific explanations of human experience, to which psychological explanations belong.⁴⁴ To avoid this psychological trap and for other reasons Heidegger is at pains to meticulously define terms and to create special terms that do not carry with them the overload of the Cartesian ontology.

Lest we think that the Heideggerian ontology simply presents an alternative way of looking at things that can be comfortably

meshed with a Cartesian world view, it is worth reflecting on the incommensurability of the styles of philosophical discourse provided by each.⁴⁵ In beginning with the phenomenon, and acknowledging our involvement in the world as primary, we embark on a new adventure of intellectual discovery. When taken seriously Heidegger's ontology changes the rules of the intellectual game. It subjugates theory. It changes the framework within which many of the questions that have engaged philosophers for the past four hundred years have been raised. Both directly and indirectly it also changes our perceptions of architecture and architectural practice.

The Architecture of the Object

It is possible to identify how contemporary conceptions of architecture and design have been informed by the Cartesian ontology. The major effect is indirect and rests on the entrenched view of the primacy of the subject-object divide. The great gulf between subject and object has generated two cultures. This can be traced to the Enlightenment. The burgeoning of science and objectivity, the notion of the world of nature out there able to be known and understood, did not serve primarily to rationalise the world but to divide it.⁴⁶ Science was allowed its domain, but the rest of human experience left out of this endeavour (emotions, feelings and the poetic) was appropriated by the culture of the Romantic. From this latter culture arose the great tradition of the individual, the creative genius, and the philosophical tradition of Kant and Hegel and eventually Husserl with his "science" of the subjective. In architecture the two cultures are commonly manifested as two schools of thought, education and even practice. There is architectural science, the design methods movement, design science and their progeny on the one hand and the culture of the "art object" on the other. According to the extreme scientific view architecture is or can be a science, designing can be understood in terms of logic, rules, algorithms and computational models. The extreme Romantic view is that designing is a private and subjective enterprise. Each culture has engen-

dered particular styles of architectural education, research and even practice. Both the rationalistic and the Romantic are bolstered by the Cartesian orientation—the primacy of the divide between subject and object. The Hegelian style of rhetoric that predominates architectural criticism, debate and practice in some quarters and alluded to above belongs firmly within the Romantic tradition. So too does the tradition that identifies the architect as creator and endorses the centrality of the architect in shaping the environment—the history of architecture as the story of great architects.⁴⁷

In dissolving the primacy of the subject-object distinction, the Heideggerian ontology inevitably leads to a breakdown of these two cultures and their influence on the debates on design and architecture. Elsewhere we present the case for an appraisal of these cultures in terms of the metaphors they provide for understanding design, and the extent to which they enable or disable design activity and design discourse.⁴⁸

More immediately we can consider the primacy given to the object in architecture engendered by the Cartesian ontology. There is not a single conception of the architectural object from within the Cartesian ontology but many. Firstly there is the scientific view. There is the notion of a building as a system of services, circulation routes, structural elements, fabric and functional units. The most prominent and now generally discredited conception within this view is of the building as an object of function, devoid of meaning—by several accounts the thrust of functionalism.⁴⁹ Then there are the linguistic views of the building as text, either as part of a structured system of signs as in semiotics or as text understood grammatically. In the former case buildings have static meanings striking resonances with deeply embedded individual or collective psychological structures. For the grammarians a building is a syntactic object embodying systems of grammatical rules—rules of composition. In the case of building as text it is sometimes important to be given the code for understanding the building. An example is Robert Venturi's explanation of how the facade of his extension to

the National Gallery in London is to be "read." According to the architect the facade presents a transition from the formal to the informal as one's eye moves across the facade from the old building to the distant corner of the new.⁵⁰ As a text, and attempting to follow the techniques of Derridean literary theorists, a building may offer a "deconstructed reading."⁵¹

Secondly, there are the overtly Romantic conceptions of the building. There is the "essential building." This is not the materially essential building of the functionalist but the spiritually and poetically essential building, a view popularised by Norberg-Shultz.⁵² The appropriation of the *genius loci* requires a sensitivity to place. Then there is the widely prevalent view of the building as art object, very often to be appreciated in secondary form from the fixed viewpoint, isolated and framed, as in a photograph. Then there is the building as spectacle—the building presented as though every encounter with it is to be a first encounter, every movement through it an experience with the encounter stage managed and directed by the architect. Central to these conceptions is the building as material object, from which all other experiences are derived.

The building as "art object" appears to dominate architectural culture and architectural education. The building as art object is evident as it is singled out from its context for appreciation, where it is depicted pictorially, it is "framed," and where its appreciation and evaluation are conducted as if the building exists in isolation. Gadamer indicates how this is evident in the case of architecture appreciated through the eyes of modern tourism. The idea of buildings as art objects "turns travelling into armchair browsing through picture books"⁵³ or slide shows. The work loses its place in the world in which it belongs.

Both Gadamer and Dewey denounce the "aesthetic differentiation" of art objects in opposition to the rest of experience. According to Dewey, such differentiation is based simply on the acceptance of certain existing social conditions.⁵⁴ What we now designate as art objects were once a part of everyday life. In classical and Medieval culture "the arts of the

drama, music, painting, and architecture thus exemplified had no particular connection with theatres, galleries, museums. They were part of the significant life of an organized community."⁵⁵

The isolation of the products of design as objects of art poses severe difficulties. It results in the elevation of certain design products into a realm of critical discourse that is thought to be the preserve of the expert and the connoisseur. In the case of building design there is the danger that the complaints of the users may be regarded as less interesting than the concerns of the professional critics who have a fluent grasp of stylistic and historical issues. In the case of buildings and industrial design, the magazine culture that promotes the idea of design artefacts as art objects leads to an emphasis on formal and pictorial qualities at the expense of social context, use, life cycle and environmental considerations. In designing "art objects" the physical product is all important, whereas the products of design actually include ways of life, values and means of human interaction. The sense in which an artefact assumes an autonomy as creating its own environment is easily ignored when it is isolated as an art object.

These arguments are generally well understood. Both Dewey and Gadamer take the argument a step further however. The notion of the art object tends to alienate aesthetic experience from every day experience. According to Dewey, aesthetic experience can be described in terms of "appreciative, perceiving and enjoying."⁵⁶ It applies to both "production" and "consumption." Aesthetic experience "is the clarified and intensified development of traits that belong to every normally complete experience."⁵⁷ The aesthetic experience is as evident in the tasks of dismantling a carburetor, solving a mathematical problem, titrating chemicals, or attending a sporting event as it is in admiring Chartres cathedral or painting in water colours. However, the notion of the art object tends to dictate the appropriate context in which aesthetic experience is to be discussed and against which it should be measured. The appreciation of art

becomes the archetype of aesthetic experience.

Because of the sterility of the culture that attends the isolated art object, there therefore develops a secondary and supposedly lesser culture of genuine but subversive aesthetic enjoyment. This is the realm of the popular. "The arts which today have most vitality for the average person are things he does not take to be the arts: for instance, the movie, jazzed music, the comic strip, and, too frequently, newspaper accounts of love nests, murders, and exploits of bandits."⁵⁸ The desire of both Dewey and Gadamer is to restore art to the mainstream of human experience. What is required is an understanding of buildings as part of the "flow of the circumspective,"⁵⁹ the fabric of the culture, architecture as part of the environment. What is also required is a subjugation of architectural individualism—the building standing out, the fragmentation of the environment, the architectural statement. The architecture of the object is the architecture of the tourist. It is a spectacle, readily appropriated at a glance and through the view finder of a camera.

A building is never primarily a work of art. Its purpose, through which it belongs in the context of life, cannot be separated from itself without its losing some of its reality. If it has become merely an object of the aesthetic consciousness, then it has merely a shadowy reality and lives a distorted life only in the form of an object of interest to tourists, or the subject of a photograph.⁶⁰

The Architecture of the Available

By way of contrast a Heideggerian ontology of buildings begins with the available. A building is part of a day-to-day encounter, part of the background of living. Our primordial experience is of availability. For most people for most of the time buildings are simply there. They are equipment rather than text. They do not denote anything, or connote anything. They are part of an equipmental whole; part of the background of living and working. The idea of comfort is readily appropriated in the context of

available architecture. "Inconspicuous" or "available" architecture is that with which we are comfortable. Something with which we are comfortable is culturally and environmentally appropriate. The building fits within a historical context. There is not some detached criterion of comfort immune from our involvement and the involvement of context. We can be comfortable in a tent on a lake side or in an air conditioned skyscraper.

How do we design for the available? This is clearly not a matter of matching forms to needs. The complex web of what it is that contributes to our comfort has developed together with the forms of buildings. Comfort is largely a matter of expectations being met. What determines our expectations? This is our collective experience as building users. Designing for the available is a participatory enterprise. It requires an understanding of cultural practices, including construction practices. Designing for the available requires an understanding of design as intersubjective and dialogical. In his late and somewhat obscure essay *Building Dwelling Thinking*⁶¹ Heidegger points to the primacy of *dwelling* before *building* (as verbs). As a metaphor for being-in-the-world, "dwelling" most readily captures the sense in which we are involved in the available. Through this involvement we are in a position to shape the environment.

Secondarily there is the building as meaningful. This is the encounter with buildings as having value, as being pleasing, ugly, comfortable, and defective. It is only from a background of availability and coping that we are able to appropriate buildings and their aspects as meaningful. "Heidegger is clear that things are always already understood, although we only subsequently see them explicitly as something."⁶²

How this encounter is operative requires an understanding of interpretation. According to Heidegger all understanding begins from a background that is taken for granted, there is some kind of specific perspective from which the interpretation is to be undertaken, and there is an expectation of what is to be found out. This expectation is already decided either

with finality or with reservations. Gadamer's account of hermeneutics comes in here.⁶³

In coming to understand or appreciate a familiar building facade struck by sunlight in a particular way, there is not some blank object undergoing interpretation, but a meshing of several concerns. There is the whole of which the meaningful object is a part: the composition of sun, sky and building; the sequence of encounters that has led to this particular encounter; the spatial orientation of the viewer; the viewer's mood and state of health; the viewer's current preoccupations; the memories and evocations—in other words the viewer's ever-shifting horizon, grounded in experience. This is the "thing" of Heidegger's *Building Dwelling Thinking*.⁶⁴ The facade as a "thing" is a gathering of concerns within a background of involving experience. This precedes its isolation as an object divorced from ourselves.

The third and derivative mode of experience is of the facade as an object of theoretical reflection. The context for the theoretical consideration of the facade is similarly grounded in a background of experiences and practices, but in this case it is the rarefied context of certain technical assumptions. These may be grammars, rules, principles, systems, construction principles that form part of the language with which we reflect on the building and on the design process. The fact that there are many ways of formulating these assumptions indicates that it is not where designing begins, but follows from the experience.

Is designing for the available the only kind of designing? Is there room for the untried? Is architecture to be only conservative? There will always be the great architectural experiments and the bold visions. What Heidegger's ontology tells us is that these are not the stock-in-trade of architecture, and it is only against the background of an available architecture that the new and the different make sense to us. Not every building needs to be a statement. The Heideggerian ontology directs us to what is most important.

Conclusion

It is a commonplace to remark that buildings should take account of their context and that many problems with our urban environments can be attributed to a failure in this regard. In comparing the prevalent Cartesian ontology with that of Heidegger it is a relatively simple matter to see how, in our current cultural climate, we gravitate towards buildings as decontextualised—the Heideggerian “falling.” Under the Cartesian ontology, first and foremost the building exists in itself. It is considered that this is how we conceive of buildings. This may involve notions of integrity. The building must be true to itself. According to Louis Kahn the designer should ask “What does the building want to be?” There is an essential building with a true character and a true nature. The limiting aspect of these metaphors is that context is seen only as an additional consideration. Only secondarily is the building seen in relationship to other buildings, the environment, cultural context, and community opinion.

According to the Heideggerian ontology it is the day-to-day experience of the available that is important and sets the stage for other considerations. It is the building as part of an equipmental whole. Primarily the building is simply there as part of our background, secondarily it exists as a meaningful object, third as an object of theoretical study and finally as sense data. This points to the practice of architecture as primarily an involving, worldly, atheoretical, reflective, and participatory activity.

How can the cause for an “inconspicuous” and “available” architecture be promoted within architectural education? Clearly the study of cultural and social contexts is an important step, as is the study of the phenomenon itself of the building as art object, and the rival ontologies through which practice operates. It is important that the current phenomenon of the primacy of the building as art object is brought to light as influencing our understanding of the architecture of other times and other cultures. It is also important to avoid projecting into those cultures our own post-Enlightenment preoccupations.

In the design studio the primacy of available architecture can be promoted through several major emphases. In the dialogue and reflection that surrounds the learning process there should be an identification of various modes of experience and their importance for the particular building being designed. The experience of the first time user or the tourist will be different to that of the habitual user. The familiarity inculcated within a house will be different to that in a museum. The appreciation of a building will be different when it is first opened than after ten years. This points to an emphasis on a polysemic architecture that fits within the wider context of history.

In all this the burden should be lifted from the designer as the professional who can work this single miracle of invention. The creation of available architecture by an individual is an impossibility. The means is through a community architecture, an architecture of participation. The notions of ownership of a design by the designer and the primacy of design as individual expression work against an architecture of the available.

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Notes

¹ Reference here is to the influential criticism advanced by HRH The Prince of Wales in various forums including the book *A Vision of Britain: A Personal View of Architecture*, Doubleday, London, 1989.

² In this article attention is focussed on buildings though the commentary also applies to other aspects of the built environment.

³ HRH The Prince of Wales, *Op. Cit.*, p.9.

⁴ See Donald Schön, *The Reflective Practitioner: How Professionals Think in Action*, Basic Books, New York, 1983 also Pierre Bourdieu, *Homo Academicus*, Trans. Peter Collier, Polity Press/Basil Blackwell, Cambridge, 1988.

⁵ See for example Kenneth Frampton, *Modern Architecture: A Critical History*, Thames and Hudson, London, 1980, and Charles Jencks, *Modern Movements in Architecture*, Penguin, Harmondsworth, 1973 and *The Language of Post-Modern Architecture*, Academic Editions, London, 1981.

⁶ It is apparent from the defence of the profession offered by Maxwell Hutchinson in *The Prince of Wales: Right or Wrong? An Architect Replies*, Faber and Faber, London, 1989, and Charles Jencks, *The Prince, the Architects and the New Wave Monarchy*, Rizzoli, New York, 1988, to the criticisms of the Prince of Wales that intellectual debate about architecture is still to be about grand movements. Even "community architecture" has, according to Hutchinson, been tried and is now dead. "Community architecture is dead. It was not simply killed; it was overkilled. It was a PR exercise masquerading as a crusade, and what died was the idea that it was new." (p.145)

⁷ "Experience" here has a wider meaning than the "sense experience" of the empiricists.

⁸ Martin Heidegger, *Being and Time*, trans. J. Macquarrie and E. Robinson, Basil Blackwell, Oxford, 1962.

⁹ Hubert Dreyfus, *Being-in-the-World: A Commentary on Heidegger's Being and Time, Division 1*, MIT Press, Cambridge, Massachusetts, 1991.

¹⁰ Hans-Georg Gadamer, *Truth and Method*, Sheed Ward, London, 1975.

¹¹ Dreyfus, *op. cit.*, p.45.

¹² Experience is clearly "theory laden" as is observation in empirical science. There is an indication of the importance of theory in the Prince of Wales' criticism of architecture "You cannot construct pleasing sentences in English unless you have a thorough knowledge of the grammatical ground rules." HRH The Prince of Wales, *Op. Cit.*, p.80.

¹³ Edmund Husserl, *Ideas: A General Introduction to Pure Phenomenology*, Trans. W.R. Boyce Gibson, Allen and Unwin, London, 1931.

¹⁴ See John Dewey, *Democracy and Education: An Introduction to the Philosophy of Education*, The Free Press, New York, 1916, and *Art as Experience*, Minton Balch, New York, 1934.

¹⁵ Ludwig Wittgenstein, *Philosophical Investigations*, trans. G.E.M. Anscombe, MacMillan, New York, 1958.

¹⁶ See George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*, University of Chicago Press, Chicago, 1987 and George Lakoff and Mark Johnson, *Metaphors We Live By*, University of Chicago Press, Chicago, 1980.

¹⁷ See Humberto Maturana, "Reality: The Search for Objectivity or the Quest for a Compelling Argument," *The Irish Journal of Psychology*, 1988, Vol.9, No.1, pp.25-82, and Humberto Maturana and F.G. Varela, *Autopoiesis and Cognition*, Reidel, Dordrecht, 1980.

¹⁸ A detailed critique of the Cartesian position is presented by Heidegger, *op. cit.* pp.122-134

¹⁹ *Ibid.*, p.123.

²⁰ Dreyfus, *op. cit.*, p.108.

²¹ See Marvin Minsky, *The Society of Mind*, Heinemann, London, 1987 and Andy Clark, *Microcognition: Philosophy, Cognitive Science and Parallel Distributed Processing*, MIT Press, Cambridge, Massachusetts, 1989. A general overview of cognitive science and artificial intelligence is provided by Margaret Boden in *Artificial Intelligence and Natural Man*, Basic Books, New York, 1987, and *The Philosophy of Artificial Intelligence*, Oxford University Press, Oxford, 1990.

²² "This distinction between subject and object pervades all the problems of modern philosophy and even extends into the development of contemporary phenomenology." Martin Heidegger, *Basic Problems of Phenomenology*, Indiana University Press, Indiana, 1982, p.124.

²³ Dreyfus, *op. cit.* p.119.

²⁴ See Maturana, *op. cit.*, pp.28-29.

²⁵ *Ibid.*, pp.28-29.

²⁶ Dreyfus, *op. cit.*, p.225.

²⁷ The technical term is "phenomenological."

²⁸ Evidence for this is Heidegger's rejection of Husserl's phenomenology from which he drew much of his deliberations.

²⁹ ... more accurately, "modes of being." See Dreyfus, *op. cit.* p.124.

³⁰ Dreyfus, *op. cit.*, p.94.

³¹ *Ibid.*, p.93.

³² *Ibid.*, p.68.

³³ Heidegger, *Being and Time*, *op. cit.*, pp.98-99.

³⁴ Heidegger, *Being and Time*, *op. cit.*, p.79, and Dreyfus, *op. cit.*, p.43.

³⁵ Dreyfus, *op. cit.*, p.68 and p.71.

³⁶ Heidegger calls this the "unavailable."

³⁷ Refer to Heidegger's arguments about signs: Heidegger, *op. cit.*, pp.107-114, Dreyfus, *op. cit.*, pp.100-102.

³⁸ Heidegger, *Being and Time*, *op. cit.*, p.190.

³⁹ See Hans-Georg Gadamer, *op. cit.*, p.350.

⁴⁰ Dreyfus, *op. cit.*, p.125.

⁴¹ Heidegger calls this the "occurrent."

⁴² This is the "pure occurrent."

⁴³ Dreyfus, *op. cit.*, p.84.

⁴⁴ Dreyfus, *op. cit.*, pp.85-87.

⁴⁵ The different responses to "continental philosophy" by the English-speaking intellectual community is a study in itself. The prevailing response is still one of suspicion.

⁴⁶ See Richard Rorty, *Philosophy and the Mirror of Nature*, Basil Blackwell, Oxford, 1980.

⁴⁷ See Adrian Forty, *Objects of Desire: Design and Society 1750-1980*, Thames and Hudson, London, 1986.

⁴⁸ See Adrian Snodgrass and Richard Coyne, "Models, metaphors and the hermeneutics of designing," *Working Paper*, Faculty of Architecture, University of Sydney, Sydney, 1991, Richard Coyne and Adrian Snodgrass, "Is designing mysterious? challenging the dual knowledge the-

sis," *Design Studies*, to appear, 1991, and Coyne and Snodgrass, "Where do design ideas come from?" *Working Paper*, Faculty of Architecture, University of Sydney, Sydney, 1991.

⁴⁹ See Geoffrey Broadbent, "The Deep Structures of Architecture," *Signs, Symbols, and Architecture*, Geoffrey Broadbent (ed.), Wiley, Chichester, 1980, pp.119-168.

⁵⁰ Described in audiovisual material presented at the gallery.

⁵¹ See Christopher Norris and Andrew Benjamin, *What is Deconstruction?* Academy Editions, London, 1988, and C. Andreas, *Deconstruction in Architecture*, Academy Editions, London, 1988.

⁵² Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture*, Academy Editions, London, 1980.

⁵³ Gadamer, *op. cit.*, p.78.

⁵⁴ John Dewey, *Art as Experience*, *op. cit.*, p.26.

⁵⁵ *Ibid.*, p.7.

⁵⁶ *Ibid.*, p.47.

⁵⁷ *Ibid.*, p.46.

⁵⁸ *Ibid.*, pp.5-6.

⁵⁹ "Practical circumspection" is one of the means by which we appropriate the world of the available. See Heidegger, *op. cit.*, p.98.

⁶⁰ Gadamer, *op. cit.*, p.139.

⁶¹ in Martin Heidegger, *Poetry, Language, Thought*, Trans. Albert Hofstadter, Harper and Row, New York, 1971, pp.145-161.

⁶² Dreyfus, *op. cit.*, p.197.

⁶³ See Adrian Snodgrass and Richard Coyne, "Is Designing Hermeneutical?" *Working Paper*, Faculty of Architecture, University of Sydney, Sydney, 1990, for an explanation of the primary role of interpretation in design.

⁶⁴ Heidegger, *Poetry, Language, Thought*, *op. cit.*, pp.145-161.

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