Causation & Explanation

Stathis Psillos

Central Problems of Philosophy
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Causation and Explanation

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For my daughter *Demetra*

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Preface

When I first started thinking about this book, I intended to write a short introduction to the philosophical debates surrounding the concepts of causation and explanation. Part of my motivation was the thought that, although there are quite a few splendid books on either causation or explanation, there was no book treating these two subjects together and aiming to cast light on their connections. As time passed, the short introduction grew bigger and bigger. In fact, it dawned on me that I couldn't adequately address the *link* between causation and explanation, unless I also wrote extensively about the laws of nature. And that's what I did. As a result, the title of the book should have been *Causation, Laws and Explanation*. In the end, the word *laws* was left out, yet the middle part of the book (Laws of Nature) forms its backbone.

The book is broad in scope, but by no means comprehensive. It aims to introduce students to the *main* theories of causation, laws and explanation. But it also ventures into more recent developments and approaches in these areas, aiming to show that, far from being philosophically sterile, these topics are very much alive and exciting. The book presupposes little knowledge of either metaphysics or philosophy of science and can be used in intermediate and advanced undergraduate courses. Yet I very much hope that professional philosophers, even specialists in these areas, will find it useful. The book presents no new theory of either causation or laws or explanation, but it does try to evaluate, critically discuss and draw connections among existing approaches, including some very recent ones. Having the firm belief that a book aimed to be a textbook should *not*

be partisan, I have tried to be fair in my assessment of the views I discuss. Yet I make no secret of my own view that, suitably understood, the regularity view of causation, the regularity view of laws and a nomological approach to explanation are still serious philosophical contenders.

During the early stages of my work for this book, I had the privilege of extended discussions with Wes Salmon. Wes had promised me to make detailed comments on the final draft, but his untimely death deprived me of this great honour (and the philosophical community of a first-rate philosopher and a real gentleman). I am sure the book would have been much better had Wes looked at it. Another great source of inspiration (as for very many others) has been David Lewis's work. All those who work on causation, laws and explanation will feel his untimely loss. I owe a great intellectual debt to all philosophers whose views I discuss in the book, but I feel that I have to make a special reference to the inspiration I got from the work of David Armstrong, Nancy Cartwright, John Earman, Carl Hempel, Philip Kitcher, J. L. Mackie, D. H. Mellor, Peter Railton, F. P. Ramsey and Barry Stroud. Once more, David Papineau has been a great teacher for me. His encouragement has been instrumental for the completion of the book. Two anonymous readers for Acumen have made important suggestions and comments, which, I hope, have led to a substantial improvement of the final product. Their hearty endorsement of the draft they read gave me the strength I needed to carry on. Some other colleagues and friends gave me thorough comments on several portions of the book. I should particularly like to thank Helen Beebee, Alexander Bird, Mark Lange and Rebecca Schweder. The graduate students who attended a course based on this book last year were wonderful critics of both its content and its style. And my colleagues in the Department of Philosophy and History of Science at the University of Athens created a very friendly environment for me to work in. The errors that, I am sure, still remain would have been many more without the generous help I received from all those people. Steven Gerrard at Acumen deserves special mention for his support throughout the completion of this book. Many thanks should also go to Jenny Roberts, who copy-edited this book, for the care with which she read the typescript.

A good part of this book was written during the summer of 2001 in Platania, a beautiful village at the foot of Mount Idi in Crete. I am

indebted to my family and other local people for making my stay there so comfortable and for giving me the space I needed to work. My wife Athena has been a source of endless care and love (as well as a great teacher of how psychologists think about causation). Finally, a couple of months after the book had been sent to the readers, our daughter, Demetra, was born. I couldn't wait to dedicate it to her.

S. P.
Athens, May 2002

Abbreviations

ADT	Armstrong–Dretske–Tooley
BT	the basic thesis: all causal explanations of singular events can be captured by the deductive–nomological model
CE	the thesis that all explanation of singular events is causal explanation
CI	causal interaction
CQ	conserved quantity
DN	deductive–nomological
DNP	deductive–nomological–probabilistic
DS	deductive–statistical
HNS	Humean nomic supervenience
HS	Humean supervenience
IP	inductive probabilism
IS	inductive–statistical
IT	insufficiency thesis
MRL	Mill–Ramsey–Lewis
MT	mark-transmission
NT	the set of all laws
PLV	the Principle of Limited Variety
PUN	the Principle of Uniformity of Nature
RMS	the Requirement of Maximal Specificity
RVC	the Regularity View of Causation
RVL	the Regularity View of Laws
SR	statistical-relevance

Introduction

The birth of our daughter was the *cause* of great happiness to my wife and me. This *explains* why I decided to dedicate this book to her. It also *caused* certain changes in our life (for instance, that our study at home had to be converted to a nursery). It *brought about* a delay in the completion of the current book, which (hopefully) *explains* why this book might well be a bit better than it would have been had I rushed to finish it. It is *because of* her birth that I have come to realize how challenging and exciting parenthood is. And this *explains* my recent interest in books about babies. And so on and so forth.

Causal and explanatory talk is so pervasive in our everyday life, as well as in the sciences, that its importance can hardly be exaggerated. We search for causes and look for explanations in order to *understand* how and why things around us are the way they are, or behave and change in certain ways. But we also search for causes and look for explanations in order to *intervene* in the course of nature (or in the course of events, in general) and bring certain effects about or prevent others from occurring. We are interested in causation and explanation because we are *thinkers* and *agents*, because we are both theoretical and practical beings. We are worried, for instance, about the future because of certain recent developments (e.g., the destruction of the environment, or the revival of terrorism and of war, or the depletion of natural resources, or the resurgence of racism and xenophobia). We think (rightly) that we have identified at least some of the causes of this worry and we want to act to eliminate them, as well as their own causes. Theory

and practice are cemented together by the chains of causation. We offer *reasons* for our actions. But reasons, as Donald Davidson has famously stressed, can be causes of action. Besides, learning the causes of an event (be it the breaking out of the Second World War, or the collapse of a bridge, or the famine in Ethiopia) enhances our knowledge of why it happened as well as our ability to prevent similar events from happening. It also gives us *reasons* to form well-supported beliefs.

It is, of course, one thing to acknowledge, or stress, the centrality of the concepts of causation and explanation in our intellectual and practical life, and quite another thing to say what these concepts are concepts *of*. What is causation and what explanation? And how exactly are the two related? Answering these questions is the job of philosophers. Intuitively, explanation and causation go hand-in-hand. Isn't it a platitude, after all, that in order to explain something, you need to cite its causes? This platitude might not be fully general, since there are non-causal explanations (most typically, mathematical explanations), but it seems to go a long way in highlighting the *link* between causation and explanation: causes do explain and explanation does proceed via stating causes. But can we go beyond this platitude? In particular, can we offer adequate theories of causation and explanation? Can we specify the semantics of causal and of explanatory talk?

Such questions become even more urgent if we take into account that, as of late, philosophers seem to make free use of the concepts of causation and explanation in their attempts to analyse and solve traditional philosophical problems. We now have causal theories of *knowledge*, causal theories of *perception*, causal theories of *reference*, causal theories of *identity through time*, causal-role theories of *mental states* and so on. All these are piled up on top of more traditional problems such as the problem of *mental causation* (how, that is, the mental can act causally on the physical), or the problem of what exactly are the *relata* of (i.e. the things that are related by) causal relations (events, facts, states of affairs, etc.), or the problem of the *explanatory autonomy* of the special sciences, or the nature of *inference to the best explanation*. It seems either that we have to appeal to some shaky prephilosophical intuitions about causation and explanation when we investigate all of the above, or else that we need to do some serious groundwork to clarify what exactly we

refer to when we speak of causation and explanation. A central aim of this book is to present and critically discuss some of this groundwork in an attempt to clarify some of the basic conceptual issues that are involved in the philosophical debates about causation, laws of nature and explanation.

Philosophers have long disagreed about the nature of causation and explanation. They have offered different theories, either within the same or within rival metaphysical agendas. In Michael Scriven's (1975: 3) apt words, the concepts of causation and explanation "enjoy a curious love–hate relationship" with philosophers. Most think that these concepts are central to all our thinking about science (as well as about our everyday affairs) and try hard to analyse them, but there are some who *deny* their importance and suggest that the sooner they are fully dispensed with the better.

Causation

Let's start with causation. Perhaps the most famous denier of causation was Bertrand Russell (1918), who actually thought that the concept of causation was incoherent. But this was just as well for him, since, as he alleged, physics has stopped looking for causes: for "there are no such things". Here is his famous dictum: "The law of causality, I believe, like much that passes muster among philosophers, is a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm."[1] Now, even if Russell were right about physics – although what he asserts with confidence is, to say the least, debatable – he is definitely wrong about the other sciences. Even a cursory look at subjects such as economics, psychology and biology will persuade the non-believer that scientists do hunt for causes and assume that causes are there to be hunted. Quite powerful methods (such as randomized controlled experiments – *aka* clinical trials – and causal modelling) have been developed to aid the discovery of causal dependencies between factors and magnitudes. Far from having survived because of the erroneous supposition that it does no harm, the search for causes has been both successful and beneficial.

In a fashion similar to Russell's, Rudolf Carnap also noted that, strictly speaking, the concepts of "cause" and "effect" are meaningful only within the "perceptual world", and that, having as their

domain of application that world, "they are infected with the imprecision which attaches to concept formations within this world" (1928: 264). This may well be so, but all that it implies is that the concept of causation needs analysis and regimentation. As a matter of fact, the project initiated by Carnap and his fellow logical empiricists (but also followed by other eminent philosophers) was an attempt to *characterize* and *rescue* a legitimate core from the concept of causation, by equating causation with *de facto* invariable succession or actual regularity. This is what has come to be known as the Regularity View of Causation (RVC). It is typically seen as offering a *reductive* account of causation. As with all reductive accounts, causal talk becomes legitimate, but it does not imply the existence of a special realm of causal facts that make causal talk true, since its truth conditions are specified in non-causal terms, that is, in terms of spatiotemporal relations and actual regularities.

Most of the empiricists' ammunition has come from Hume's critique of causation. Ever since David Hume's work, philosophers of an empiricist persuasion have thought that the concept of causation is too mysterious or metaphysical to be taken seriously without any further analysis. Hence, they engaged in an attempt to *demystify* causation. They thought that the main culprit was the idea that causation implies the existence of *necessary connections* in nature, that is, connections between the causally related events that make it, somehow, necessary (or inescapable) that the effect follows from the cause. Hume was taken as the great denier of such necessary connections and as the one who conclusively showed that there were no such things to be found in nature. This denial of necessary connections in nature may be seen as the hallmark of modern Humeanism.

Some Humeans (most notably John Stuart Mill and John L. Mackie) advanced more sophisticated versions of RVC. A prominent thought has been that causation should be analysed in terms of *sufficient and necessary conditions* (roughly, an event *c* causes an event *e* if and only if (iff) there are event-types *C* and *E* such that *C* is necessary and sufficient for *E*). Another one has been that to call an event *c* the cause of an event *e* is to say that there are event-types *C* and *E* such that *C* is an *insufficient* but *necessary* part of an *unnecessary* but *sufficient* condition for *E* – *aka inus* condition). A rather important objection to Humeanism has been that regularity is not

sufficient for causation. There are too many regularities in nature and not all of them are, intuitively, causal. So Humeans have been inegalitarians towards regularities. They have tried to characterize the kind of regularity that can underpin causal relations by tying causation to laws of nature. However, other philosophers who advocate Humeanism downplay the role of regularities (or laws) in causation. A rather prominent approach has been Lewis's account of causation in terms of *counterfactual conditionals* (roughly, an event *c* causes an event *e* iff if *c* hadn't happened then *e* wouldn't have happened either). To be sure, regularities do enter the counterfactual approach to causation but in a roundabout way: as means to capture the conditions under which counterfactual assertions are true.

Many non-Humean theories deny forcefully that the analysis of causation need involve regularities, either directly or indirectly. John Curt Ducasse's *single-difference* account (roughly that an event *c* causes an event *e* iff *c* was the last – or the only – difference in *e*'s environment before *e* occurred) takes causation to link individual events independently of any regular association that there may or may not be between events like the cause and events like the effect. Salmon's *mechanistic* approach (roughly that an event *c* causes an event *e* iff there is a causal process that connects *c* and *e*) stresses that there is a local tie between a particular cause and a particular effect. Causation, non-Humeans argue, is essentially singular: a matter of *this* causing *that*.

Some philosophers think, contra Hume, that causation is directly *observable*. Others take it to be a *theoretical* relation, posited to explain a particularly robust connection between some events. Many philosophers think that if we are to avoid methodological obscurity and conceptual circularity, we have to cast the analysis of causation in non-causal terms. However, others argue that such an analysis is impossible. They dispel the charge of circularity by arguing that the concept of causation is so *basic* that it cannot be really analysed in non-causal terms. All that can be done, they claim, is to offer an enlightening account of how several causal concepts are interlinked and mutually understood.

I shall now try to offer a brief diagnosis as to why there is no general agreement among philosophers on what causation is. In a nutshell, the diagnosis is that the concept of causation seems to be

characterized by conflicting intuitions, which, although almost equally central, cannot be all accommodated in a single theory. A number of philosophers – most notably D. H. Mellor (1995), Peter Menzies (1996) and David Armstrong (1999) – have recently tried to approach causation via what they have called "platitudes".[2] Perhaps, it's best to make a distinction between *platitudes* (assuming that there are some platitudinous features of causation that any theory should accommodate) and *intuitions* (assuming that there are some firm prephilosophical views about what causation is). Some of the platitudes of causation are these:

- The *difference* platitude: causes make a difference – that is, things would be different if the causes of some effects were absent. This platitude is normally cast in two ways: the *counterfactual* way – if the cause hadn't been, the effect wouldn't have been either; and the *probabilistic* way – causes raise the *chances* of their effects – that is, the probability that a certain event happens is higher if we take into account its cause than if we don't.
- The *recipe* platitude: causes are recipes for producing or preventing their effects – that is, causes are the means to produce (or prevent) certain ends (effects).[3] This platitude is normally cast in terms of *manipulability*: causes can be manipulated to bring about certain effects.
- The *explanation* platitude: causes explain their effects, but not vice versa.
- The *evidence* platitude: causes are evidence for their effects – that is, knowing that *c* causes *e*, and knowing that *c* occurred, gives us (some) reason to expect that *e* will occur.

It's not hard to agree that each and every theory of causation should accommodate these platitudes, that is, show how each of them is brought out by whatever, according to the theory, constitutes the relation of cause and effect. But there are two central intuitions about causation that also need to be taken into account.

- The *intrinsic-relation* intuition: whether or not a sequence of two distinct events *c* and *e* is causal depends wholly on the events *c* and *e* and their own properties and relations, that is, it

depends wholly on the intrinsic and local features of the actual sequence of events. For instance, according to this intuition, when we say that *the hitting with the hammer caused the smashing of the porcelain vase* what makes our assertion true has only to do with the properties of the particular hammer, the particular vase and the particular hitting.

- The *regularity* intuition: whether or not a sequence of two distinct events *c* and *e* is causal depends on whether or not events like *c* are regularly followed by events like *e*. This intuition is captured by the dictum "same cause, same effect" and is underpinned by an epistemic consideration; namely, that we are unwilling to pronounce a sequence of events *c* and *e* causal unless there has been a regular association between events like *c* and events like *e*. For instance, according to this intuition, when we say that *the hitting with the hammer caused the smashing of the porcelain vase* what makes our assertion true has to do with the fact that the hitting of porcelain vases with hammers is regularly followed by the smashing of the vases.[4]

Now, these two intuitions pull in contrary directions. The regularity intuition implies that a sequence of events is causal if and only if it instantiates a regularity. Hence, it implies that the relation of cause and effect is *extrinsic* to its relata. It makes causation dependent on *general* facts: on what happens at other places and at other times. The intrinsic-relation intuition opposes all this. It takes causation to be wholly dependent on *singular* facts: on what happens there and then, in the actual sequence of events, independently of any regularities. It would be a daunting (not to say just outright impossible) task to advance a theory that respects both of these intuitions. Most typically, Humeans base their theories on the regularity intuition, while non-Humeans base theirs on the intrinsic-relation one. A somewhat detailed investigation of the distinction between Humean and non-Humean approaches has to wait until the end of Chapter 4 (section 4.5), where, after we have examined several accounts of causation, we shall offer a map of the terrain.

It would do no harm, however, to highlight three dimensions along which the discussion about causation can be based. We have already seen the first two. The first concerns the distinction

between generalist and singularist theories. The second dimension concerns the distinction between theories that aim at an extrinsic characterization of causal relations and theories that go for an intrinsic one. The third dimension concerns the distinction between reductive approaches and non-reductive ones. Reductive approaches argue that causation is dependent on (some say it *supervenes* on) non-causal features of the world (e.g. regularities), while non-reductive accounts take causation to be ontically autonomous: an irreducible relation among events. On a first approximation, then, one could say that Humean accounts of causation take the first sides of the three distinctions: they are generalist, extrinsic and reductive. And non-Humean accounts take at least one of the remaining sides of the three distinctions: they are singularist or intrinsic or non-reductive. As further investigation will show, however, things are more complicated. Perhaps it's not very profitable to try to divide theories of causation sharply into Humean and non-Humeans, although, as we shall see, we can go some way towards achieving this task.

Laws of nature

Most Humeans have come to adopt what may be called the Regularity View of Laws (RVL): laws of nature are regularities. However, they have a hurdle to jump. For not all regularities are causal. Nor can all of them be deemed laws of nature. The night always follows the day, but it is *not* caused by the day. Nor is it a law of nature that all coins in my pocket are Euros, although it is a regularity. So the Humeans have to draw a distinction between the good regularities (those that constitute the laws of nature) and the bad ones (those that are merely accidental). Only the former, it was thought, can underpin causation and play a role in explanation. We shall see in some detail the various empiricist attempts to draw this distinction, and in particular, what I shall call the *web-of-laws* view.

According to this view, the regularities that constitute the laws of nature are those that are expressed by the axioms and theorems of an ideal deductive system of our knowledge of the world, and, in particular, of a deductive system that strikes the *best* balance between simplicity and strength. Simplicity is required because it disallows extraneous elements from the system of laws. Strength is

required because the deductive system should be as informative as possible about the laws that hold in the world. Whatever regularity is not part of this *best system* is merely accidental: it fails to be a genuine law of nature. The gist of this approach, which has been advocated by Mill, Ramsey and Lewis, is that no regularity, taken in isolation, can be deemed a law of nature. The regularities that constitute laws of nature are determined in a kind of holistic fashion by being parts of a structure. As we shall see, the *web-of-laws* view does succeed, to a large extent, in answering the question "What is a law of nature?". Yet its critics argue that it compromises the fully objective status that the laws of nature are, typically, taken to have. Why, they tend to ask, should lawhood have anything to do with how our *knowledge* of the world is organized in a deductive system? There is no doubt that the Humeans should try to dispel this charge of subjectivity. The good news, however, is that they can, to some extent at least, secure the objectivity of laws. But, as I shall argue, in order to do so they have to adopt a certain metaphysical picture; namely, that the world has an *objective* nomological structure. This structure, to be sure, will be a structure of *regularities*. Yet it may well be the case that it is objective relations among the elements of this structure, and *not* our beliefs about them, that determine what regularities are parts of this structure, and hence what regularities constitute laws of nature.

It should be noted, however, that even if the *web-of-laws* view can be deemed successful, there is a price to pay. By denying that there is any necessity in causation, the Humeans have to deny that there is any necessity in the laws of nature. Their non-Humean opponents then are quick to point out that without some appeal to a sufficiently strong concept of necessity, the distinction between laws of nature and accidental regularities will not be robust enough to support either causation or explanation. What, in short, emerges from their arguments is the view that lawhood cannot be reduced to regularity (not even to regularity-plus-something-that-distinguishes-between-laws-and-accidents). Lawhood, we are told, is a certain necessitating relation among properties (*universals*). It is noteworthy that *both* the Humeans and the advocates of the view that laws embody necessitating relations among properties agree that laws of nature are *contingent*. They do not hold in all possible worlds: they could be different, or there could be no laws at all. Yet, there has been a

growing tendency among non-Humeans to take laws of nature to be metaphysically necessary. A standard Humean retort to all these views is that, far from being enlightening, the notion of necessitation that is supposed to characterize the laws of nature (either as a contingent relation among properties or as embodying a stronger metaphysical sense of necessity) is wrong-headed and obscure.

Explanation

When it comes to the concept of explanation things may seem more promising. Here, the Logical Empiricist project of demystifying causation culminated in the attempts made by Hempel and his followers to analyse the concept of causation in terms of the concept of *explanation*. They thought that the latter could be made to be scientifically respectable by being itself analysed in terms of the concept of laws of nature and the concept of a deductive argument. The famous (to some notorious) deductive–nomological (DN) model of explanation has been a systematic attempt to subsume causation under causal explanation and to show that the latter can be fully understood and legitimized as a species of deductive argument, with one of its premises stating a universal law. In fact, the empiricist project was advanced further by enlarging the kind of arguments that can be explanations so as to include *inductive* arguments (and statistical, as opposed to universal, laws).

This reliance on laws makes it very pressing for the advocates of the DN model to have a neat way to distinguish between genuine laws of nature and accidentally true generalizations, for it is only the former that can be mentioned in legitimate explanations. The presence of an accidental generalization as a premise in a DN argument would amount to a cancellation of the nomological side of the argument. One can certainly deduce (a description of) the fact that this apple is ripe from the general statement "All apples in the fruit bowl are ripe" and the premise "this apple is in the fruit bowl". Yet this deduction hardly explains *why* this apple is ripe. Compare, however, the above with the following case. Intuitively, at least, the following argument is a perfectly legitimate explanation of the fact that Pluto describes an ellipse: Pluto is a planet and all planets move in ellipses. The difference, the advocate of the DN model would argue, is that *All apples are in the fruit bowl* is an accident, whereas

All planets move in ellipses is a genuine law. As a result of all this, the project of developing an adequate DN model of explanation can proceed only hand-in-hand with an attempt to characterize the genuine laws of nature.

The irony of the empiricist project is that what came out of the front door seemed to be re-entering from the window. For it seems that we cannot distinguish between good and bad explanations of some phenomena, *unless* we first distinguish between causal and non-causal explanations, or better between those explanations that reflect the causal connections between what-is-doing-the-explaining (the *explanans*) and what-is-explained (the *explanandum*) and those that do not. So it seems that we first need to sort out the concept of causation and then talk about causal explanation. If this is right, then the empiricist project outlined above gets things the wrong way around.

Yet there are plausible ways for modern empiricists to argue that, suitably understood in terms of the concept of *unification*, explanatory relations can still subsume causal relations under them. Put in a nutshell, the idea is that explanation proceeds via unification into a deductive system: a certain fact, or a regularity, is explained when a description of it is deduced within a unified deductive system. Causal relations, then, are said to mirror explanatory relations within an ideal unified deductive system. What is really interesting here is that the concept of unification can be connected with the *web-of-laws* view. Unification proceeds by minimizing the number of regularities that have to be accepted as *brute* (or as unexplained explainers). These regularities might well be accepted as the fundamental laws of nature and be captured by the axioms of an ideal deductive system that strikes the best balance between simplicity and strength. Such an ideal deductive system is none other than a unified deductive system. In line with the *web-of-laws* view, the fundamental laws of nature are the best unifiers. Yet those philosophers who resist the attempt to subsume causation under explanation point out that the foregoing view of explanation as unification will not deliver the goods. Not only is it possible that the world be disunified, but, more importantly, it seems that the foregoing view is unable to specify the conditions under which an explanation is correct. It seems, we are told, that we need to rely on the *causal structure of the world*; it is because the world has a certain causal

structure that some explanations are correct (those that capture this causal structure), while others are not. If these philosophers, notably Salmon, are right, then causal relations simply *cannot* mirror explanatory relations, even within an ideal unified system of the world. Rather, the opposite should be the case: explanatory relations, even within an ideal unified system of the world, should reflect (and capture) ontically prior causal relations.

In any case, not all philosophers agree that causal explanation should be tied to laws and have the form of an argument. Opponents of the DN model argue that explanation should rely on finding out the causes of the *explanandum*, but it need not cite laws: presenting information about the causal history of an event, or citing factors that raise the probability of an event to happen, or even stating some invariant relations among the *explanandum* and the *explanans* is taken to be enough for a good causal explanation.

The fact of the matter is that the concepts of causation, laws of nature and explanation form a quite tight web. Hardly any progress can be made in the elucidation of any of those without engaging in the elucidation of at least some of the others. All we may then hope for is not strict analysis, but some enlightening account of their interconnections.

The menu

Although I have already hinted at the contents of this book, a more orderly presentation of the chapters to follow may help the readers orientate themselves better. Chapter 1 is about Hume and the setting up of RVC. It unravels the two projects that Hume was engaged in; namely, the analysis of causation as it is in the world and the analysis of the nature of causal inference. It culminates with a discussion of Hume's two definitions of causation. It ends with a short discussion of recent re-interpretations of Hume's views, which distance Hume from RVC, and which have given rise to the *new Hume debate*. Chapter 2 discusses Mill's elaboration of RVC, with special reference to his *methods of agreement and difference* for discovering causal laws. It also examines Ducasse's attempt to mount a major challenge to RVC and to motivate a singularist approach to causation based on Mill's method of difference. It criticizes a popular argument to the effect that causation is an observable relation and ends with

some discussion of Davidson's attempt to reconcile the Humean and the singularist approach. Chapter 3 discusses two major attempts to analyse causation in terms of *counterfactual conditionals*; namely, Mackie's and Peter Lewis's. It also analyses Mackie's own formulation of RVC (which takes causes to be *inus* conditions). Finally, it ventures into a discussion of recent counterfactual approaches, such as Huw Price's and Menzies' human agency view and Daniel Hausman's and James Woodward's interventionist view. Chapter 4 (which concludes the part on causation) investigates theories that characterize the link between cause and effect in terms of some mechanism that *connects* them. After discussing views that argue that in the transition from the cause to the effect something *persists* or something gets *transferred*, it focuses on Salmon's early and later attempts to analyse physical causation in terms of causal processes and the transference of conserved quantities. It moves on to analyse Phil Dowe's attempt to analyse causation without an appeal to counterfactuals. It concludes with offering a rough *conceptual map* of the terrain of causal theories.

Part II of the book (on laws of nature) starts with Chapter 5, whose main aim is to critically discuss RVL. It starts with naïve versions of RVL, which simply equate laws with regularities, raises the issue of how RVL needs to be supplemented to account for the distinction between laws and accidents, and examines two major attempts towards such a supplementation: the view that the difference between laws and accidents is merely a difference in our epistemic attitudes towards them, and the much-promising Mill–Ramsey–Lewis (MRL) view, which takes laws to differ from accidents in that the regularities that are laws form a tight web. Chapter 6 focuses on non-Humean theories of lawhood. It analyses the view of Armstrong, Fred Dretske and Michael Tooley that laws are relations of contingent necessitations among properties. It strongly questions the notion of necessitation that they appeal to. It then moves on to discuss even stronger theories of lawhood, which take laws to be metaphysically necessary. It ends with a critical examination of recent arguments against the Humean view that laws supervene on non-nomic facts. Chapter 7 presents recent attempts to supersede the traditional framework of the debate on laws, by focusing more on methodological aspects of the role of laws. Among the issues that are being examined are Woodward's characterization

of laws as relations that are invariant-under-interventions, Cartwright's appeal to capacities, Lange's view on the collective stability of laws and Mellor's focus on the link between laws and natural properties. This chapter will end with a cost–benefit analysis of the major views of laws and will suggest that, on balance, RVL is still the best characterization of what a law of nature is.

The final part of the book (Part III) is on *explanation*. It starts, in Chapter 8, with the DN model of explanation. It highlights the Humean-empiricist project to deal with causation via the concept of explanation and critically discusses the counter-examples that were supposed to have uprooted the DN account. It tries to show with some precision what these counter-examples have and what they have *not* shown. It ends with an investigation of Lewis's theory of causal explanation. Chapter 9 extends the empiricist project to statistical explanation and discusses Hempel's inductive–statistical (IS) model and its problems, Salmon's statistical-relevance (SR) model and Railton's deductive–nomological–probabilistic (DNP) account. Chapter 10 extends further the empiricist project to the explanation of laws. It analyses Michael Friedman's and Philip Kitcher's models of explanatory unification. Finally, Chapter 11 engages with the issue of the connection between causation and explanation. Here, the challenge is whether the Humean-empiricist project can be completed – whether, that is, it can be shown that the explanatory relations are primary and that, somehow, the causal relations follow from them. It will be argued that Humeans can go a long way towards meeting this challenge, but that, in doing so, they have to adopt the realist view that the world has an objective structure, in which mind-independent regularities form a unified system. This insight, I will suggest, can be found in the work of Ramsey.

Absences

Three absences from this book require brief apology. I do not discuss (apart from a few brief mentions) issues related to *probabilistic causation*. We do rightly claim that, for instance, smoking causes lung cancer or that aspirin relieves headaches, even though there is no regular association (or deterministic connection) between smoking and lung cancer or taking aspirin and relief from headaches. Some philosophers think that this is already a good argument against the

view that causation is connected with invariable sequences or regularities. They then try to analyse causal claims in terms of probabilistic relations among variables, capitalizing on the intuition that causes (mostly, but not invariably) raise the probabilities of their effects. Some think that there are good empirical reasons to jettison determinism (roughly, the view that each and every event has a fully sufficient set of causes) in favour of indeterminism (roughly, the view that there are genuinely chancy events). They then try to show that indeterminism and causation mix well, given the thought that a certain event can be *caused* to happen even though its cause made only a difference to its chance of happening. Interestingly, these ideas are extended to deterministic causation as well, with the prime thought being that an effect is deterministically caused to happen if its probability, given its cause, is unity. It is also noteworthy that probabilistic theories of causation are advanced by both Humeans (who think that causal connections are reducible to relations of probabilistic dependence) and non-Humeans (who think that causal relations are *not* reducible to probabilistic relations but, nonetheless, take the latter to illuminate causation.) Discussing these intricate matters would have made this book unmanageably long. So the reader is advised to look at Patrick Suppes (1984), David Papineau (1985) and Ellery Eells (1991) for excellent accounts of probabilistic causation. For what it is worth, my own view is close to Hausman's (1998: 186). I too think that acceptance of indeterminism implies the acceptance of uncaused things, but that there can be fully deterministic causation of probabilistic states.

Another issue I do not discuss (apart from a few scattered observations and remarks) concerns the *direction of causation*. Why is it the case that causes precede their effects in time? Some philosophers (including Hume) thought that this feature is conceptually constitutive of causation, while others think that it is an empirical feature of the actual world, which needn't obtain in other possible worlds. Other philosophers try to define the order of causation independently of the concept of time, so that they can then explain the direction of time in terms of the direction of causation. All philosophers who have thought hard about causation have dealt with this issue of *causal priority*. But, here again, I would advise the interested reader to look at Paul Horwich (1987) and Hausman (1998) for excellent guidance into all this.

Finally, a third issue I do not touch at all relates to the so-called *pragmatics of explanation*. Some philosophers focus on the *act* or the *process* of explaining, instead of the *product* of explanation. They argue that an explanation should be seen as an answer to a why-question and note that the *relevant* answers will depend on the presuppositions or the interests of the questioner, on the space of alternatives, and, in general, on the context of the why-question. Here is Alan Garfinkel's (1981: 21) famous example. A priest asked Willie Sutton, when he was in prison, "Why did you rob banks?", to which Sutton replied, "Well, that's where the money is". Garfinkel's thought is that this is a perfectly legitimate answer for Sutton, because for him the space of relative alternatives (the contrast class) concerns robbing groceries or diners or petrol stations, and so on. But the space of relevant alternatives for the priest is quite different: not robbing anything, being honest, and so on. The difference of perspective can be brought out by placing the emphasis on different parts of the question: "Why did you rob *banks*?" as opposed to "why did you *rob* banks?" Pragmatic theories of explanation, very different in their details but quite similar in their overall focus on the act of explaining and the contrast classes, have also been offered by Bas van Fraassen (1980) and Peter Achinstein (1983).

With all this in mind, it's now time to leave the starter and move on to the main three-course meal. I hope you enjoy it.

I Causation

1 Hume on causation

1.1 The regularity view of causation

A good starting point for our philosophical endeavours is David Hume's account of causation. His work on this subject has been, by far, the most important and influential ever. Hume's account has been taken to be a *reductive* one. It's been typical to call this account the Regularity View of Causation (RVC).

> RVC
> *c* causes *e* iff
> (a) *c* is spatiotemporally contiguous to *e*;
> (b) *e* succeeds *c* in time; and
> (c) all events of type *C* (i.e., events that are like *c*) are regularly followed by (or are constantly conjoined with) events of type *E* (i.e. events like *e*).

So, on RVC, causation reduces to spatiotemporal contiguity, succession and constant conjunction (regularity). It reduces, that is, to non-causal facts. A corollary of RVC is that there is no necessity in causation: there is no necessary connection between the cause *c* and the effect *e* that goes beyond – or underpins – their regular association. RVC has been espoused by many eminent philosophers and has been taken to be the official Humean view. Here are a few representative statements of it.

> The Law of Causation . . . is but the familiar truth that invariability of succession is found by observation to obtain between

> every fact in nature and some other fact which has preceded it . . . (Mill 1911: 213)

> We must ask ourselves: when we assume causation, do we assume a specific relation, cause-and-effect, or do we merely assume invariable sequence? That is to say, when I assert "every event of class A causes an event of class B", do I mean merely "every event of class A is followed by an event of class B", or do I mean something more? Before Hume the latter view was always taken; since Hume, most empiricists have taken the former. (Russell 1948: 472)

> In nature one thing just happens after another. Cause and effect have their place only in our imaginative arrangements and extensions of these primary facts. (Ayer 1963: 183)

> The trouble with causation is, as Hume pointed out, that there is no evident way of distinguishing it from mere invariable succession. (Quine 1974: 5)

> [a] statement about a causal relation . . . describes an observed regularity of nature, nothing more. (Carnap 1974: 201)

> [According to Hume] to say of a particular event *a* that it caused another event *b* is to place these two events under two types, *A* and *B*, which we expect to be constantly conjoined in the future as they were in the past. (Kripke 1982: 67)

RVC has been traced to what Hume thought and said. Take, for instance, a famous passage from his *Abstract* to *A Treatise of Human Nature*, in which Hume discusses one of his favourite examples of causation, the collision of two billiard balls:

> Here is a billiard-ball lying on the table, and another ball moving towards it with rapidity. They strike; and the ball, which was formerly at rest, now acquires a motion. This is as perfect an instance of the relation of cause and effect as any which we know, either by sensation or by reflection. Let us therefore examine it. 'Tis evident, that the two balls touched one another

> before the motion was communicated, and that there was no interval betwixt the shock and the motion. *Contiguity* in time and place is therefore a requisite circumstance to the operation of all causes. 'Tis evident likewise, that the motion, which was the cause, is prior to the motion, which was the effect. *Priority* in time, is therefore another requisite circumstance in every cause. But this is not all. Let us try any other balls of the same kind in a like situation, and we shall always find, that the impulse of the one produces motion in the other. Here therefore is a *third* circumstance, *viz*., that is a *constant conjunction* betwixt the cause and effect. Every object like the cause, produces always some object like the effect. Beyond these three circumstances of contiguity, priority, and constant conjunction, I can discover nothing in this cause. The first ball is in motion; touches the second; immediately the second is in motion: and when I try the experiment with the same or like balls, in the same or like circumstances, I find that upon the motion and touch of the one ball, motion always follows in the other. In whatever shape I turn this matter, and however I examine it, I can find nothing farther. (A: 649–50)

Hume says, very explicitly, what he *does* find in a case where two events are related as cause and effect: *contiguity, priority and constant conjunction*. He doesn't say, in this passage or elsewhere in the *Abstract*, what *else* one might have expected him to find, which Hume doesn't. He is more explicit on this in the body of his *A Treatise of Human Nature* (Book I, part iii), and his *An Enquiry Concerning Human Understanding*.[1] Hume's predecessors thought there were also *necessary connections* to be found in nature.[2] They thought that, when *c causes e*, there is something in virtue of which *c* produces, or brings about, or necessitates *e*: the cause has the power to produce the effect and the effect follows with *necessity* the cause. On the received reading of Hume's *Treatise*, this element of necessity is exactly what Hume does *not* find in causation, as it is in the objects: there is no place for necessity in nature. Once more, this reading of Hume is not unrelated to his own pronouncements. Compare his famous dictum: "Necessity is something that exists in the mind, not in objects" (T: 165). Accordingly, Hume has been typically read as "the great denier of necessary connections" (Lewis 1986f: ix).

In the last 20 or so years, however, there has been an altogether different reading of Hume's work on causation, whose origins can be found in Norman Kemp Smith's (1941) authoritative commentary on Hume's *Treatise* and in John P. Wright's (1973) work. Wright proclaimed that far from being a reductivist about causation and an eliminativist about real necessity in nature, Hume was a "sceptical realist". He was, we are told, a "causal realist" because he accepted the view that "there are real causes in nature" (1973: 127), that is, that there are objective necessary connections between events in nature. But, the claim goes on, Hume was a *sceptic* about our understanding and knowledge of them (cf. 1973: 144). This revisionary interpretative strand has been reinforced by Edward Craig (1987) and has found its *magnum opus* in Strawson (1989). These new readings of Hume have led to what Kenneth Winkler (1991) has aptly called "the New Hume". Craig goes as far as to state confidently:

> Off the agenda now is the idea that [Hume] taught a strict regularity theory: that there is nothing in reality but regular sequence, and that that is accordingly all that causality amounts to, either in our concept of it or in things and events themselves. True, the tendency to speak of regularity theories as "Humean" persists, but unless it is meant . . . as nothing more than a label without historical connotations, this usage just betokens a limited acquaintance with the work of Hume.
>
> (2000: 113)

These pronouncements might be premature. Even if it can be argued that, for Hume, what we *mean* when we talk of causation is not just regular sequence, it is not so easy to argue that for him causation, *as it is in the world*, is something more than regular sequence. Be that as it may, what I plan to do in this chapter is go through Hume's reasoning in some detail, in the hope that, in the end, we shall have a better understanding of his views on causation and their philosophical implications. In the final section, I shall engage in a discussion of the so-called "New Hume".

Before we proceed, a note on terminology is in order. Different philosophers use the term *causal realism* in different ways. Strawson (1989: 84), for instance, calls causal realism the view that "there is something about the fundamental nature of the world in

virtue of which the world is regular in its behaviour". Michael Tooley (1987: 246), on the other hand, calls causal realism the anti-reductive view that "the truth-values of causal statements are not, in general, logically determined by non-causal facts". On both characterizations, RVC would not be a causal realist position. However, it would be wrong to conclude from this that RVC is an anti-realist position. Contra Strawson's causal realism, advocates of RVC accept that it is regularities *all the way down*, and yet also accept that these regularities are *real, objective and mind-independent*. Similarly, advocates of RVC accept, contra Tooley's causal realism, that causation reduces to regularity, and yet they accept that these regularities are *real, objective and mind-independent*. So an advocate of RVC is (or can be) a realist about regularities. In so far as causation reduces to regularities, an advocate of RVC can then be a realist about causation. With these clarifications in mind, let's reserve the term "causal realism" for those views that assert that there are objective necessary connections between events in nature as well as for those views that deny that causation is reducible to non-causal facts. And let us say that, without being causal realist, RVC is a *causal objectivist* position in the sense that the regularities that causation reduces to are fully objective and mind-independent.

1.2 The two projects

Hume (T: 74) states his aim very explicitly: "This relation [of causation], therefore, we shall endeavour to explain fully before we leave the subject of the understanding." Why was he interested in the study of causation? His answer, as it is expressed succinctly in the *Abstract*, is this:

> 'Tis evident that all reasonings concerning *matters of fact* are founded on the relation of cause and effect, and that we can never infer the existence of one object from another, unless they be connected together, either mediately or immediately. In order therefore to understand these reasonings, we must be perfectly acquainted with the idea of a cause . . . (A: 649)

So the relation of causation underpins all our reasoning about matters of fact. Of the three "philosophical relations" that relate matters of

fact (i.e. objects in the world, or impressions), namely "identity", "situations in time and space" and "causation", only causation is special in the sense that it can take us "beyond what is immediately present to the senses" and can "produce a connexion" between objects that are not immediately perceived (cf. T: 73). But causation is not *just* a philosophical relation, that is, a relation that obtains between objects in the world, or impressions. It is also a "natural relation" (T: 15), that is, a relation with which the *mind* operates: it is such that it "produces an union among our ideas" (T: 94). It is because causation is a natural relation that "we are able to reason upon it, or draw any inference from it" (T: 94).[3] This last observation is very important to Hume because causal reasoning seems to be somewhat the analogue of demonstrative reasoning when it comes to matters of fact. As demonstrative reasoning extends our knowledge beyond what is immediately given in *intuition* (cf. T: 70), so causal reasoning seems to extend our knowledge beyond what is immediately given in experience.

It would be wrong, however, to think that Hume's only aim was to explain the nature of causal *reasoning*. His project has two aspects, as he thinks we can approach causation in two ways: as a "philosophical" relation and as a "natural" one. It can be argued that analysing causation as a "philosophical relation" aims to unravel what can be legitimately said of causation as it is in the objects, whereas treating it as a natural relation aims to unravel the feature of causation in virtue of which it is involved in reasoning. These two aspects of his project will lead to his two definitions of causation (see section 1.9).

1.3 Impression hunting

One major constraint of Hume's account of causation is his empiricist epistemology. The cornerstone of this epistemology is the thought that "all our ideas, or weak perceptions, are derived from our impressions, or strong perceptions, and that we can never think of any thing we have not seen without us, or felt in our own minds" (A: 647–8; cf. also T, 4). Let's call this the Basic Methodological Maxim. Put in a nutshell, it asserts: *no impressions in, no ideas out*. Ideas are nothing but "faint images" of impressions "in thinking and reasoning" (T: 1). This is not the place to examine Hume's

theory of ideas. What concerns us is what concerns him *vis-à-vis* causation: what is the impression of the idea of causation? It is essential to his project to show that *there is* such an impression. For if there was not, and if the Basic Methodological Maxim was accepted, then the whole idea of causation would become vacuous (it could not exist, or in modern terms, it would be meaningless). But he does not doubt that we have this idea (cf. T: 74–5). Hume notes that this idea cannot stem from a quality (or property) of an object. Being a cause is not a particular quality of an object. It's not like being red, or being square. So to say that *c* is a cause is simply a way to describe *c* (in relation to an effect *e*) and not a way to ascribe a property to *c*. Hence, the idea of causation *cannot* derive from the impression of a property (quality) of an object. It follows that the idea of causation "must be derived from some *relation* among objects" (T: 75). What are the "essential" characteristics of this relation? They are at least two:

- spatial *contiguity* (or the presence of "chains of causes" if the two objects are not contiguous, cf. T: 75)
- temporal *succession*: "that of PRIORITY of time in the cause before the effect" (T: 76).

Hume, however, thinks that contiguity and succession are *not* sufficient for causation: they cannot "afford . . . a complete idea of causation" (T: 77). For, "an object may be contiguous and prior to another, without being consider'd as its cause" (*ibid*.). Let's call *coincidental* a sequence of events *c* and *e* such that they are spatiotemporally contiguous, *c* precedes *e*, but *c* is not the cause of *e*. And let's call *causal* a sequence of events that is not coincidental. If contiguity and succession cannot afford the basis for a distinction between a causal sequence and a coincidental one, what can? Although it is still quite early in his project, Hume is adamant in claiming that when we restrict ourselves to *particular* sequences, there is nothing beyond contiguity and succession to be discovered: "We can go no *farther* in considering this particular instance" (*ibid*.). So, when it comes to examining a particular instance (such as the collision of two billiard balls), there is nothing that can distinguish between this instance's being a causal sequence and its being merely coincidental. We "would say nothing", Hume (T: 77) adds,

if we were to characterize a causal sequence in terms of expressions such as *c produces e*. For, the idea of "production" is synonymous with the idea of causation, and hence it would offer no further illumination.

Hume acknowledges that what is taken to distinguish between causal sequences and coincidental ones is that only the former involve some kind of necessary connection between events *c* and *e*. Hence, since contiguity and succession do not exhaust the characterization of causation, "NECESSARY CONNEXION" should also "be taken into consideration" (T: 77). So

- *necessary connection* ("and that relation is of much greater importance, than any of the other two above-mention'd" (T: 77)).

A thought that presents itself at this point is that part of the *meaning* of the idea (concept) of causation is the idea of necessary connection. Hume's insistence on the necessary connection has led Kemp Smith to argue that Hume was far from advocating RVC. For Hume, Kemp Smith argues, "causation is more than sequence, and more also than invariable sequence. We distinguish between mere sequence and causal sequence; and what differentiates the two is that the idea of necessitation (determination or agency) enters into the latter as a quite essential element" (1941: 91–2). Be that as it may, Hume does take necessary connection to be the characteristic of causation (or, at least, the characteristic *attributed to* causation) that merits analysis. He does not have to *deny* that the idea of necessary connection is conceptually constitutive of causation. All he needs to do is *explain* the possession of this idea in a way conformable to his own epistemology. This is a pressing issue for him for the following reason. The idea of necessary connection is an idea that we do possess, but whose origin Hume is unable to find either in the "known qualities of objects" or in their "relations". Necessity, as Kemp Smith (1941: 369) has put it, is the "essential differentia" of causation. But Hume argues that we cannot find this differentia "when we look about us towards external objects, and consider the operation of causes" (E: 63), that is, when we consider causation as a relation in the world (i.e. as a "philosophical relation"). He insists that "we are never able, in a

single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an infallible consequence of the other" (E: 63). Is it, then, an idea without a corresponding impression? If so, his Basic Methodological Maxim would be refuted: we would be in possession of an idea without a corresponding impression. Hume did entertain this possibility, but considered it implausible, since, as he said, his Basic Methodological Maxim "has already been so firmly establish'd, as to admit of no farther doubt" (T: 77). Hence, Hume should try to explain how the idea of necessary connection arises; how, that is, it enters into our minds.

In a rather astonishing move, Hume abandons the route he has chosen, namely, the direct hunt for an impression that leads to the idea of necessary connection, in an attempt to ground this idea to impressions in a roundabout way. What Hume does at this juncture is shift his attention from the project of analysing causation as a "philosophical relation" – which was proved futile as an attempt to reveal the origin of the idea of necessary connection – in order to look at causation as a "natural relation".

1.4 Constant conjunction

What happens when we engage in causal inference? Hume's answer is captivatingly simple. We have memory of past co-occurrences of (types of) events *C* and *E*, where *C*s and *E*s have been directly perceived, or remembered to have been perceived. This co-occurrence is "a regular order of contiguity and succession" among tokens of *C* and tokens of *E* (T: 87). So when, in a *fresh instance*, we perceive or remember a *C*, we "infer the existence" of an *E*. Although in all past instances of co-occurrence, both *C*s and *E*s "have been perceiv'd by the senses and are remember'd", in the fresh instance, *E* is not yet perceived, but its idea is nonetheless "supply'd in conformity to our past experience . . . Without any further ceremony, we call the one [*C*] *cause* and the other [*E*] *effect*, and infer the existence of the one from that of the other" (*ibid*.). This is a basic psychological inferential procedure by which the observed past constant co-occurrence of *C*s and *E*s leads us to conclude (and to form the belief) that upon the fresh perception of a *C*, an *E* will (or *must*) follow. What is important in this process of causal inference is that it reveals "a new

relation betwixt cause and effect", a relation that is different from *contiguity*, *succession* and *necessary connection*:

- *constant conjunction*

It is this "CONSTANT CONJUNCTION" (T: 87) that is involved in our "pronouncing" a sequence of events causal. Hume says that contiguity and succession "are not sufficient to make us pronounce any two objects to be cause and effect, unless we perceive, that these two relations are preserv'd in several instances" (*ibid.*). Remember that contiguity and succession are characteristics of single sequences. But they are not enough to exhaust the idea of causation. The "new relation" – constant conjunction – is a relation *among* sequences. It says: "like objects have always been plac'd in like relations of contiguity and succession" (T: 88). So ascriptions ("pronouncements") of causation cannot be made of single sequences: we first need to see whether a certain sequence instantiates a constant conjunction. Does that simply mean that a sequence *is* causal (if and) only if it instantiates a constant conjunction among the relevant event types?

There is no straightforward answer to this question – at least, not yet. Hume has been describing the inferential procedure by which we move from causes to effects and has noted that this procedure is activated when (and only when) constant conjunction is present (has been observed). From this it does *not* follow that causation, as it is in the objects, amounts to constant conjunction. Hume *cannot* identify the necessary connection with the constant conjunction. For the observation of a constant conjunction generates *no* new impression in the objects perceived. Hence, Hume cannot, in a simple and straightforward manner, identify causal sequences with (instantiations of) regularities. Hume takes pains to explain why this is so (cf. T: 88; E: 75). He points out that the mere *multiplication* of sequences of tokens of *C* being followed by tokens of *E* adds no new impressions to those we have had from observing a single sequence. Observing, for instance, a single collision of two billiard balls, we have impressions of the two balls, of their collision, and of their flying apart. These are *exactly* the impressions we have no matter how many times we repeat the collision of the balls. The impressions we had from the single sequence did not include any

impression corresponding to the idea of necessary connection. But since the multiplication of instances generates no new impressions in the objects perceived, it cannot possibly add a new impression that might correspond to the idea of necessary connection. As Hume puts it: "From the mere repetition of any past impression, even to infinity, there never will arise any new original idea, such as that of necessary connexion; and the number of impressions has in this case no more effect than if we confin'd ourselves to one only" (T: 88). So, the idea of necessary connection remains recalcitrant. There was nothing in this idea that implied that only sequences that instantiate regularities (constant conjunctions) could possess necessary connections, and hence be causal. And the new relation of constant conjunction added no new impression, which could make necessary connection be a feature of the sequences that instantiate regularities. So Hume then faces a conundrum. He did unravel a "new relation betwixt cause and effect", but it is not the one that can lead him to a straightforward impression-based explanation of the idea of necessary connection, and hence of causation.

Yet "it wou'd be folly to despair too soon" (T: 88). The reason why constant conjunction is important (even though it *cannot* directly account for the idea of necessary connection by means of an impression) is that it is the *source* of the inference we make from causes to effects. So, looking more carefully at this inference might cast some new light on what exactly is involved when we call a sequence of events causal. As Hume put it: "Perhaps 'twill appear in the end, that the necessary connexion depends on the inference, instead of the inference's depending on the necessary connexion" (T: 88).

1.5 Causal inference

"What is the nature of that *inference* we draw from the one [event] to the other?" (T: 78). The crucial problem here is to examine whether this is a rational inference and hence whether it belongs to the realm of Reason. This is important for the following reason. Since (a) there is no direct impression corresponding to the idea of necessary connection, (b) Hume does accept (or, at least, he does not deny) that there is this idea, and (c) he has located the *source* of this idea in causal inference, the immediate objection to his view is that the *source* of the idea of necessary connection is Reason itself.

If Reason *determined* us to infer an effect from its cause, then the necessity of this inference could well be the very idea of necessary connection, whose origin Hume has been seeking. To be sure, Hume can easily dispel this objection by noting that Reason alone does not compel us to make the inference from cause to effect. What he says repeatedly is that causal inference is not a demonstrative inference. Consequently, it cannot be justified a priori, with the lights of Reason only. We can never demonstratively infer the effect from its cause, since we can always *conceive* without contradiction the effect without the cause, or the cause without the effect.[4] Here is a typical statement of this point:

> There is no object, which implies the existence of any other if we consider these objects in themselves, and never look beyond the ideas which we form of them. Such an inference wou'd amount to knowledge, and wou'd imply the absolute contradiction and impossibility of conceiving any thing different. But as all distinct ideas are separable, 'tis evident there can be no impossibility of that kind. (T: 86–7)

But the real bite of the objection we are considering is that although Reason alone might not be able to justify causal inference, Reason "aided by experience" (T: 92) (and in particular, by the experience of constant conjunction) might be able to underpin the *necessity* of causal inference.

It is precisely for this reason that Hume undertakes to prove that there simply cannot be an argument that shows that we are engaged in rational – "just" (T: 89) – inference when we form causal beliefs.[5] In order to conclude, upon the occurrence of a *C*, that an *E* will (let alone, *must*) follow, it is not enough to plug in the premise that *C*s and *E*s have been constantly conjoined in the past. We need a stronger premise; namely, that all *C*s *are E*s, where the universal quantifier "all" should really range over *all C*s and *E*s, past, present and future. As Hume notes, this required premise would have to rely on the principle that "instances, of which we have had no experience, must resemble those, of which we have had experience, and that the course of nature continues always uniformly the same" (T: 89).

Let's call this the Principle of Uniformity of Nature (PUN). Hume's point is that experience (in the form of *past* constant

conjunctions) is not enough to guide Reason in justifying causal inference. Something more is needed to rationally underpin causal inference; namely, PUN. Or, more or less equivalently, what is needed is "a presumption of resemblance" between the observed and the unobserved. Now, PUN either can be provided by pure Reason, or else it must be grounded in experience. It cannot be provided (in the sense of being justified) by pure Reason simply because it is not demonstratively true: "we can at least conceive a change in the course of nature; which sufficiently proves that such a change is not absolutely impossible" (T: 89). Here again, what does the work is the idea that past constant conjunction is *distinct* from future constant conjunction, and hence that one can conceive the former without the latter. So PUN cannot be justified a priori by pure Reason. Nor can it be grounded in experience. Any attempt to rest PUN on experience would be circular. From the observation of *past* uniformities in nature, it cannot be inferred that nature is uniform, unless it is assumed what was supposed to be proved; namely, that nature *is* uniform – that is, that there is "a resemblance betwixt those objects, of which we have had experience [i.e. past uniformities in nature] and those, of which we have had none [i.e. future uniformities in nature]" (T: 90). In his first *Enquiry*, Hume is even more straightforward: "To endeavour, therefore the proof of this last supposition [that the future will be conformable to the past] by probable arguments, or arguments regarding existence, must evidently be going in a circle, and taking that for granted, which is the very point in question" (E: 35–6).

Hume's conclusion is that neither Reason alone, nor Reason "aided by experience", can justify causal inference. This has come to be known as his inductive scepticism, but it is a corollary of his attempt to show that the idea of necessary connection cannot stem from the supposed necessity that governs causal inference. For, whichever way you look at it, talk of necessity in causal inference is unfounded. Hume summed up this point as follows:

> Thus not only our reason fails us in the discovery of the *ultimate connexion* of causes and effects, but even after experience has inform'd us of their *constant conjunction*, 'tis impossible for us to satisfy ourselves by our reason, why we shou'd extend that experience beyond those particular instances, which have

> fallen under our observation. We suppose, but are never able to prove, that there must be a resemblance betwixt those objects, of which we have had experience, and those which lie beyond the reach of our discovery. (T: 91–2)

And elsewhere he stated:

> Let men be once fully perswaded of these two principles, *That there is nothing in any object, consider'd in itself, which can afford us a reason for drawing a conclusion beyond it; and, That even after the observation of the frequent or constant conjunction of objects, we have no reason to draw any inference concerning any object beyond those of which we have had experience*. (T: 139)

Since the foregoing argument proves what Hume thought it would, namely, that causal inference does not depend "on the necessary connexion", the road is open for his claim that "the necessary connexion depends on the inference" (T: 88). But before we see how he proceeds, it is important to examine a few serious objections to his argument so far. (Those readers who wish to carry on with Hume's argument are advised to move directly to section 1.7.)

1.6 Necessity$_1$ vs necessity$_2$

Mackie called "*necessity*$_1$ whatever is the distinguishing feature of causal as opposed to non-causal sequences" and "*necessity*$_2$ the supposed warrant for an *a priori* inference" (1974: 12), and argued that Hume conflated these two distinct kinds of necessity. Now, Hume does seem to think that the necessity that would distinguish between causal and non-causal sequences (necessity$_1$) should be the necessity with which a conclusion would follow from a valid demonstrative argument (necessity$_2$).

In the *Enquiry* he makes this point thus:

> When we look about us towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an

> infallible consequence of the other. We only find, that the one does actually, in fact, follow the other. (E: 63)

In the *Treatise*, this point is made forcefully when he examines whether recourse to "powers" can save the idea of necessary connection. Hume considers in some detail the popular thought that what distinguishes between causal sequences and non-causal ones is that, in a causal sequence, the cause has a *power* to bring about the effect. From the fact, it might be said, that *C*s have always been followed by *E*s in the past, we may posit that *C*s have a *C*-power to bring about *E*s. So, from a fresh *c* and the concomitant *C*-power, we may infer that *e* will occur (cf. 1739: 90). Hume goes to some length to challenge this suggestion.[6] But he does take it to be the case that *if* such powers existed, they would entitle us to a priori inferences from causes to effects:

> If we be possest, therefore, of any idea of power in general . . . we must distinctly and particularly conceive the connexion betwixt the cause and effect, and be able to pronounce, from a simple view of the one, that it must be follow'd or preceded by the other. . . . Such a connexion wou'd amount to a demonstration, and wou'd imply the absolute impossibility for the one object not to follow, or to be conceiv'd not to follow upon the other. (T: 161–2)

Hume then insists that this "kind of connexion has been rejected in all cases" (T: 162), since there cannot be demonstrative a priori inference from cause to effect. But, in the process of his thought, he seems to use his argument against necessity$_2$ as a weapon against necessity$_1$, without offering reasons why necessity$_1$ is the same as necessity$_2$. As Mackie (1974: 13) put it, "his search for necessity$_1$ is sacrificed to his argument against necessity$_2$". In light of this, Mackie raises three important complaints against Hume. First, Hume's arguments against necessity$_2$ are correct but irrelevant, for Hume has wrongly tied causal inference to demonstratively valid inference, and has wrongly demanded that all reasons should be deductive. Secondly, although Hume did not consider "reasonable but probabilistic inferences" (1974: 15), the possibility of some kind of "non-deductively-valid argument" that is nonetheless

rational and does underpin causal inference is not "excluded by Hume's argument" against necessity$_2$ (*ibid.*). So, there is still room for someone to argue against Hume that even if a cause does not necessitate its effect in the sense of necessity$_2$, a cause *c*, together with the constant conjunction between event-types *C* and *E*, can still "probabilify" the effect *e*. Thirdly, Hume has no argument at all against necessity$_1$. In the next three subsections, we shall examine these three complaints and shall try to disarm them.

1.6.1 The traditional conception of reason

Mackie claims that "Hume's premiss that 'reason' would have to rely on the principle of uniformity holds only if it is assumed that reason's performances must all be deductively valid" (1974: 15). If Mackie were right in this, then Hume's point against necessity$_2$ would be valid but weak. Hume would merely point to the fact that causal inferences are not (or, cannot be) demonstrative. But if an inference need not be demonstrative to be good (or rational), Hume's claim would be weak. Is, then, Hume's point simply that a causal inference could never be demonstrative? By no means. Hume bases his case on a *dilemma* he poses to the traditional conception of Reason. His point is that, *by the very lights of the traditional conception of Reason*, causal inference cannot be a rational inference *either* in the sense of offering demonstrative reasons *or* in a looser sense of offering good (but not conclusive) reasons to accept the causal conclusion. This is a truly sceptical conclusion that does *not* hinge on the claim that all reasons must be deductive, a claim that Mackie falsely attributes to Hume. It amounts to the claim that the traditional conception of Reason undermines itself.

What is this traditional conception of Reason? It is the view that all beliefs should be justified (that is, backed up by *reasons*) in order to be rational. It is also the view that no inference is rational unless it is shown that it offers *reasons* to accept its conclusion. Simply put, the traditional conception of Reason craves reasons and justification. Actually, Hume's insight is that the traditional conception of Reason is hostage to the search for a *hierarchy* of reasons, which, however, is detrimental to the rationality of causal inference that it has sought to establish. On the traditional conception of Reason, it is not enough to say that the premises of a causal inference give us

reasons to accept its conclusion. This would be an empty ritual, unless it was shown that these are, indeed, *reasons*. Causal inference itself would have to be *justified*. What this means is that one would have to offer a *further* reason *R* for the claim that the premises of the inference do give us *reasons* to rationally accept the conclusion. This further reason *R* would be a *second-order reason*: a *reason* to accept that *C*, together with the past constant conjunction of *C*s and *E*s, is a (first-order) *reason* to form the causal conclusion that *E*. A moment's reflection shows that one would be faced with either an infinite regress or outright circularity. Hume's observation, then, is that on the traditional conception of Reason itself, causal inference remains unfounded. It cannot be justified in accordance with the demands of the traditional conception of Reason simply because the attempted justification would be question-begging.[7]

To appreciate Hume's critique of the traditional conception of Reason, let us look at the shape that the justification of causal inference could take. It can be easily seen that the following argument (*AR*) is *invalid*:

(*AR*)
(*PC*) All observed *C*s have been followed by *E*s
(*C*) A *C* is observed now

(*E*) An *E* will occur.

If PUN were added as an extra premise, the conclusion (*E*) would then logically follow from the premises. The invalid argument (*AR*) would be thereby turned into the valid argument (*AR′*):

(*AR′*)
(*PC*) All observed *C*s have been followed by *E*s
(*C*) A *C* is observed now
(*PUN*) The future resembles the past

(*E*) An *E* will occur.

Now, Hume did argue that PUN is neither demonstratively true nor justifiable without circularity on the basis of experience. So it might be thought that his aim was *just* to show that the principle needed to turn (*AR*) into the deductively valid argument (*AR′*) is

without foundation. If, indeed, this were his only aim, it would be reasonable to argue that Hume did successfully show that there was no basis to take (*AR′*) to be a *sound* argument. But then Mackie would also be reasonable to argue that Hume's success was a Pyrrhic victory. For, surely, there is more to Reason's performances than demonstrative arguments.

Yet Hume's aim was *much* broader. Hume perceived that *on the traditional conception of Reason*, we are faced with the following dilemma. If only demonstrative inferences are taken to be rational inferences, then the so-called causal inference cannot be rational at all. For rendering a causal inference demonstrative – and hence rational – would require a *proof* of the truth of PUN, which is not forthcoming. If, on the other hand, a *looser sense* of rational inference is allowed, where we can still non-deductively infer the conclusion from the premises, provided that the premises give us good *reasons* to rationally accept the conclusion, then causal inference cannot be taken to be rational either. Why is that?

Suppose that one argued as follows. Argument (*AR*) above is indeed invalid, but there is no need to render it as (*AR′*) in order to justify causal inference. For, one would continue, all we need is a *non-demonstrative*, yet *reasonable*, argument such as (*AR″*):

(*AR″*)	
(*PC*)	All observed *C*s have been followed by *E*s
(*C*)	A *C* is observed now
(*R*)	(*PC*) and (*C*) are reasons to believe that *E* will occur
(*E*)	Probably, an *E* will occur.

Hume's general point is precisely that, by the very lights of the traditional conception of Reason, principle (*R*) cannot be a good reason for the conclusion (*E*). Not because (*R*) is not a deductively sufficient reason, but because any defence of (*R*) would be question-begging.[8] To say, as (*R*) in effect does, that a *past* constant conjunction between *C*s and *E*s is reason enough to make the belief in their *future* constant conjunction *reasonable* is just to assume what needs to be defended by further reason and argument.

1.6.2 The AP property

Mackie's second complaint against Hume is precisely that there *are* good arguments to defend the view that a *past* constant conjunction between *C*s and *E*s is reason enough to make the belief in their *future* constant conjunction *reasonable*, provided that we allow for reasonable *probabilistic* inferences. Let's, following Strawson (1989: 111), call "AP property" a property such that if it could be detected in a causal sequence, it would bring with it "the possibility of making *a priori certain causal inferences*". Hume has conclusively shown, Mackie says, that causal sequences do not have the AP property. Yet, he adds (1974: 17), Hume has *failed* to show that they also lack the property of licensing "probabilistic *a priori* causal inferences".[9] This is supposed to be a weakened version of the AP property: the past constant conjunction between *C*s and *E*s makes it a priori more likely (although not certain) that future tokens of *C* will be accompanied by future tokens of *E*, than not. If Mackie is right, Hume has neglected a real possibility of understanding the rational nature of causal inference, and hence the nature of necessary connection. Is there anything that can be said in Hume's defence?

The reason why Hume didn't take seriously the possibility canvassed by Mackie is that to call some sequences of events *necessary* in the weaker sense that the occurrence of the first event makes a priori *more likely* the occurrence of the other would constitute no progress at all. For, one can perceive nothing *in* the sequence of *c* and *e* that points to the occurrence of *e* after *c* has been perceived. Hence one perceives nothing that can give rise to an impression that *e* is likely to occur. Hume does acknowledge that the more frequently we observe *C*s being followed by *E*s, the more "fortified" and "confirmed" is the belief that, upon a fresh *c*, an *e* will follow (cf. E: 58). But he claims that this is the product of custom, and in particular of the "custom to transfer the past to the future".

> . . . where the past has been entirely regular and uniform, we expect the event with the greatest assurance, and leave no room for any contrary supposition. But where different effects have been found to follow from causes, which are to *appearance* exactly similar, all these various effects must occur to the

> mind in transferring the past to the future, and enter into our consideration, when we determine the probability of the event. (E: 58)

For Hume there is simply *no* reason to think that when, given past experience, we believe that a certain future event is more *likely* to happen than not, we avoid reliance on the problematic "supposition, *that the future resembles the past*" (T: 134).

Now, Mackie thinks that Hume was wrong in this. He insists that "a probabilistic inference would not need to invoke the uniformity principle which produces the circularity that Hume has exposed" (1974: 15). To say that, given the past co-occurrence of *C*s and *E*s, when an event of type *C* occurs an event of type *E* is likely to occur is *not* to say that the event of type E *will* occur; hence, it does *not* amount to asserting that the future *will* (or does) resemble the past.

Even if we were to grant to Mackie that PUN is not presupposed by a priori probabilistic inference (something which is very doubtful), it is clear that some substantive principles – which cannot, therefore, be seen as a priori true – have to be invoked. Here is an interesting example. In order to defend his view that, contra Hume, there is space for *rational* a priori probabilistic inference, Mackie (1974: 15) appeals to John Maynard Keynes's (1921) system of inductive logic. This is not the place to review the many problems that this (as well as Carnap's 1950) so-called logical theory of probability faces.[10] It suffices for our purposes to note that Keynes (1921: 287) founded his system of inductive logic on what he called the Principle of Limited Variety (PLV). Without getting into technicalities, let's envisage the following possibility. Suppose that although *C* has been invariably associated with *E* in the past, there is an unlimited variety of properties $E_1, \ldots, E_n$ such that it is logically possible that future occurrences of *C* will be accompanied by any of the E_is ($i = 1, \ldots, n$), instead of *E*. Then, and if we let n (the variety index) tend to infinity, we cannot even start to say how likely it is that *E* will occur given *C*, and the past association of *C*s with *E*s.[11] So we cannot engage in probable causal inference, unless PLV, that is, a principle that excludes the possibility just envisaged, is true. Hume's argument against PUN can now be recast against PLV. The latter is not an a priori truth; nor can it be grounded on experience, without begging the question. To call this principle synthetic a priori is of no help. It would simply beg the

question against Hume.[12] So neither Hume nor we should try to save some notion of necessity by introducing a probabilistic analogue of necessity$_2$.

1.6.3 Hidden powers

Mackie's (1974: 13) final objection is that Hume "has no case at all" against necessity$_1$; namely, whatever is the distinguishing feature of causal as opposed to non-causal sequences. This, Mackie (1974: 20) says, is supposed to be "an intrinsic feature of each individual causal sequence". But Hume did offer a rather important argument against necessity$_1$. He insisted that we could never observe such an intrinsic feature *in* the sequence. This, of course, does not imply that there is not such a feature. Yet Hume accepted what might be called the *Manifestation Thesis*: there cannot be unmanifestable "powers", that is, powers that exist, even though there are no impressions of their manifestations. Hence, he stresses: "'tis impossible we can have any idea of power or efficacy, unless some instances can be produc'd, wherein this power *is perceiv'd* to exert itself" (T: 160). And repeats: "If we be possest, therefore, of any idea of power in general, we must also be able to conceive some particular species of it" (T: 161). And again: "The distinction, which we often make betwixt *power* and the *exercise* of it, is equally without foundation" (T: 171). No such exercise of power is ever perceived in sequences of events, or in events that occur in our minds. But then, contra Mackie, no necessity$_1$ – *qua* an intrinsic feature that makes a sequence causal – is ever perceived. The Manifestation Thesis is, then, strong enough to disallow that there are such things as powers, and hence such a thing as necessity$_1$.

Indeed, Hume spends quite some time trying to dismiss the view that we can meaningfully talk of powers. His *first* move is that an appeal to "powers" in order to understand the idea of necessary connection would be no good because terms such as "*efficacy*, *force*, *energy*, *necessity*, *connexion*, and *productive quality*, are all nearly synonimous" (T: 157). Hence, an appeal to "powers" would offer no genuine explanation of necessary connection. His *second* move is to look at the theories of his opponents: Locke, Descartes, Malebranche and others. The main theme of his reaction is that all these theories have failed to show that there are such things as

"powers" or "productive forces". As he puts it: "This defiance we are oblig'd frequently to make use of, as being almost the only means of proving a negative in philosophy" (T: 159). In the end, however, Hume's best argument is a reiteration of his Basic Methodological Maxim: that we "never have any impression, that contains any power or efficacy. We never therefore have any idea of power" (T: 161). In so far as we take the concept of "necessary connexion betwixt objects" to mean that this connection "depends upon an efficacy or energy, with which any of these objects are endow'd", then this concept has no "distinct meaning" (T: 162).[13]

It may, of course, be objected that Hume's argument against necessity$_1$ is wrong because it is based on an excessive verificationism, as this may be evinced by Hume's Manifestation Thesis. This may well be so. Empiricists have protested against *unmanifestable* powers, based on the epistemic argument that if they are unmanifestable, then they cannot be known to exist. From this, it does not of course follow that they *don't* exist. This move from what can (or cannot) be known to exist to what does (or does not) exist has been dubbed the *epistemic fallacy*. And it is, indeed, a fallacy. But, in defence of Hume, it might be said that his Manifestation Thesis is more of an application of Ockham's razor than the product of the epistemic fallacy. Ockham's razor says: do not multiply entities beyond necessity. For Hume, positing such unmanifestable powers would be a gratuitous multiplication of entities, especially in light of the fact that Hume thinks he can explain the origin of our idea of necessity without any appeal to powers and the like. Still, Hume might be wrong in his argument. But Mackie is certainly wrong to think that Hume has no case at all against necessity$_1$.

1.7 Union in the imagination

Let us briefly review where we stand. I have just said that Hume denies necessity$_1$; namely, an *intrinsic* feature that is possessed by causal sequences and is lacked by non-causal ones. He does, however, think (or, at least, he does not deny) that the idea of necessity is part of the idea of causation. But, so far, there has been nothing to prevent this idea from being an idea of an *intrinsic* feature of a single sequence that renders it causal. If Hume had managed to identify his "new relation" of constant conjunction with necessity,

he could at least argue that necessity is an *extrinsic* feature of some sequences in virtue of which they are causal; namely, the feature that relates to the fact that some sequences instantiate regularities. But, as we saw in section 1.4, he cannot afford this identification. So he is still pressed to show what the origin of the idea of necessary connection is. Having deviated from his original impression hunting, he has endeavoured to show that we are *not* engaged in rational inference when we form causal opinion. But then, what is the foundation of causal opinion? Hume's hope is that the search for this foundation will help him pin down the mysterious idea of necessity.

Hume claims that it is the "union of ideas" by principles of the imagination, and not of Reason, that explains the formation of our causal beliefs and opinions. He introduces three basic "principles of union among ideas" in the imagination. They are: *resemblance*, *contiguity* and *causation* (T: 93). These principles are the backbone of Hume's alternative (psychological) theory of reasoning. They are "neither the *infallible* nor the *sole* causes of an union among ideas" (T: 92). However, they are "the only *general* principles, which associate ideas" (T: 92–3). The positive argument for his theory of belief formation is "Had ideas no more union in the fancy than objects seem to have to the understanding, we coul'd never draw an inference from causes to effects, nor repose belief in any matter of fact. The inference, therefore, depends solely on the union of ideas" (T: 92). The argument is a *reductio ad absurdum* of the view that Reason governs causal inference and belief formation. If causal inference and belief formation had the features that the traditional conception of Reason demanded of them, then there would be no transition from cause to effect, nor belief formation. But there are both. Hence, the way in which the traditional conception of Reason conceives causal inference and belief formation is wrong. Causal inference and causal belief formation are governed by different principles. What makes, on Hume's account, causal inference (or, better, causal transitions from *C* to *E*), and belief formation, possible is that the principles of the imagination are in operation.

All this may lead us better to understand Hume's claim that causation is a philosophical relation as well as a "natural relation" (T: 94). Although causation is subject to philosophical analysis (whatever the consequences of this might be), it is also a "natural relation" in that it is a (the?) way in which the mind operates. This

is an empirical claim, but for Hume it is an important one because "'tis only so far as [causation] is a *natural* relation, and produces an union among our ideas, that we are able to reason upon it, or draw any inference from it" (T: 94). In other words, causation might be the object of our analysis, but it is also *presupposed* (as an empirical principle of human psychology) for the functioning of the mind. What Hume, in effect, does when he describes the mechanics of causal inference is to leave aside his analysis of causation as a "philosophical relation" and to concentrate on its role in inference *qua* a natural relation. His hope is that by looking at causation as a natural relation, he will discover the missing element of his analysis of causation as a philosophical relation, that is, the origin of the idea of necessary connection.

There are two principles of the imagination that are needed for the explanation of the formation of causal beliefs: first, the principle that an observed constant conjunction creates a "union in the imagination" between tokens of two event-types; secondly, the principle that a present impression transmits some of its force or vivacity to an associated idea. Hume puts it like this:

> We have no other notion of cause and effect, but that of certain objects, which have been *always conjoin'd* together, and which in all past instances have been found inseparable. We cannot penetrate into the reason of the conjunction. We only observe the thing itself, and always find that from the constant conjunction the objects acquire an union in the imagination. When the impression of one becomes present to us, we immediately form an idea of its usual attendant; and consequently we may establish this as one part of the definition of an opinion or belief, that *'tis an idea related to or associated with a present impression*. (T: 93)

Hume swiftly moves from the "idea of its usual attendant" to the "belief" that the usual attendant will occur. This is not surprising, since for him, a belief is just a different "manner" in which we conceive an object. A belief "can only bestow on our ideas an additional force or vivacity" (T: 96). But what really matters to his argument is that a causal belief "arises immediately, without any new operation of the reason or the imagination" (T: 102). Take, for instance, the

belief that an event *e* will happen after there appears in the mind an impression or idea of an event *c*, and perceptions or memories of the constant conjunction between *C*s and *E*s. On Hume's theory, what we would otherwise analyse as an inference (or a movement of thought) is no inference at all, since it happens automatically and unconsciously. There is no movement of thought, as it were. The belief that *e* will happen is as "unavoidable as to feel the passion of love, when we receive benefits; or hatred, when we meet with injuries" (E: 46). What governs this "immediate" transition is "Custom or Habit" (E: 43). So, from the point of view of the *description* of what happens in the mind, Hume's point is that what has appeared to be an inference is nothing but a "customary transition" (T: 103) from a certain impression or memory of an object to a lively idea of its usual attendant, where the whole process is *conditioned* by the observations of past co-occurrences. Hume stresses repeatedly that this operation of the mind is "immediate": "the custom operates before we have time for reflection" (T: 104). In particular, the mind does not rely on PUN in order to draw causal conclusions. In a certain sense, if it did, it would never draw any conclusions. As he puts it: ". . . the understanding or the imagination can draw inferences from past experiences, without reflecting on it [the Principle of Uniformity of Nature]; much more without forming any principle concerning it, or reasoning upon that principle" (*ibid*.).

What exactly is this custom, of which Hume says that it is "the great guide of human life" (E: 44)? Without going into much detail, we should note that Hume takes custom to be a central posit of his own psychological theory of belief formation. It is "a principle of human nature" (E: 43). And although he stresses that this principle is "universally acknowledged", what matters is that for him it is "the ultimate principle, which we can assign, of all of our conclusions from experience" (*ibid*.). So Hume refrains from explaining further this "ultimate principle". He just posits it, as a "cause" whose own "cause" he does not "pretend to give" (*ibid*.). As we shall see below, it is not accidental that Hume characterizes custom as a "cause". It is custom that, according to Hume, causes us to draw causal conclusions and to form causal beliefs. Hume's retreat to *causal discourse* in his attempt to unravel the foundation of causal inference – the "customary transition" – will prove indispensable for the completion of his search for the origin of the idea of necessary connection.

1.8 Necessary connection

Hume now feels fully equipped to reveal to us how, in the end, "the necessary connexion depends on the inference" (T: 88). But it's not the rationalists' inference that holds the key to the idea of necessity. It is the "customary transition" that he has put in its place. His summary of his long argument is very instructive:

> Before we are reconcil'd to this doctrine, how often must we repeat to ourselves, *that* the simple view of any two objects or actions, however related, can never give us any idea of power, or of a connexion betwixt them: *that* this idea arises from the repetition of their union: *that* the repetition neither discovers nor causes any thing in the objects, but has an influence only on the mind, by that customary transition it produces: *that* this customary transition is, therefore, the same with the power and necessity; which are consequently qualities of perceptions, not of objects, and are internally felt by the soul, and not perceiv'd externally in bodies? (T: 166)

So let us pick up the threads. The only new element that has entered Hume's analysis of causation as a philosophical relation (i.e. as a relation in the world) is constant conjunction. The idea of constant conjunction – which is *also* the driving force behind the customary transition from cause to effect – does not arise from any new impression in the objects, yet it is the *source* of the further idea of necessary connection. How is this? As he notes, "after frequent repetition I find, that upon the appearance of one of the objects, the mind is *determin'd* by custom to consider its usual attendant, and to consider it in a stronger light upon account of its relation to the first object" (T: 156). He immediately adds, "'Tis this impression, then, or *determination*, which affords me the idea of necessity".

This is slightly odd. It seems that Hume just *posits* a new impression, "determination", which will carry the weight of his explanation of the origin of the idea of necessary connection. Hume indeed starts with an aspect of his own positive theory, namely, that habit or custom operates on the mind to make it form a *belief* of the usual attendant of an object, and takes this *aspect* of his theory as a *datum* that will give rise to the required impression. It's not accidental then that Hume appended his analysis of causal inference with an

exposition of his own psychological theory of causal belief formation – which we saw in the previous section. For it turns out that his own psychological theory is essential for the completion of his original task; namely, his impression hunting. There is *something* that occurs in the mind as a result of the observation of constant conjunction. This something is not an "impression of sensation". If it were, the observation of a single instance would have the same effect on the mind. But it does not. This something, as Stroud (1978: 43) has nicely put it, is "a peculiar feeling that arises from the repeated occurrence of associated perceptions". Hume calls it an "internal impression, or impression of reflection" (T: 165). In the *Enquiry*, he calls it a "sentiment" (E: 75). But all this does not matter much, I think. That there must be an impression corresponding to the idea of necessary connection follows from Hume's Basic Methodological Maxim. That it isn't an "impression of sensation" follows from his analysis of what is perceived *in* the objects. That, nonetheless, something happens to the mind when a "multiplicity of resembling instances" is observed follows from his own positive psychological theory of causal belief formation, that is, from his own account of causation as a "natural relation". Then, it *must* be the case that this something that happens to the mind is the sought-after impression. This something that happens to the mind is what Hume calls the feeling of "determination". Indeed, Hume notes: "this determination is the only effect of the resemblance; and therefore must be the same with power or efficacy, whose idea is derived from the resemblance" (T: 165). Its presence in the human mind after the observation of "resemblance in a sufficient number of instances" (T: 165) is, as Stroud (1977: 86) has rightly put it, "simply a fundamental fact about human beings that Hume does not try to explain".

It's not accidental that Hume retreats to *causal talk* to state this fundamental fact about human beings.[14] He stresses that the idea of power or connection "is copy'd from some effects of the multiplicity, and will be perfectly understood by understanding these effects" (T: 163). And since the "multiplicity of resembling instances" has no effects on the objects involved in it, the effects we look for should be effects "in the mind" (T: 165). Ultimately, "Necessity is then the *effect* of this observation [of constant conjunction], and is nothing but an internal impression of the mind, or a determination to carry our

thoughts from one object to another" (T: 165, emphasis added). Note that Hume talks of the "effect" of constant conjunction in the mind. Note also that the very concept of determination is itself causal. His theory of how the idea of necessity arises is, then, a *causal* theory. This is really important. For Hume's central posit (the feeling of determination) is part of his causal theory of the origin of the idea of necessity. As Stroud (1977: 92) stresses, Hume offers "a causal explanation of how and why we come to think of things in our experience as causally connected".[15]

Having thus arrived at the sought-after "impression", Hume can come back to his "suspicion" that "the necessary connexion depends on the inference, instead of the inference's depending on the necessary connexion" (T: 88) in order to substantiate it. These two "are, therefore, the same", Hume says (T: 165). For "The necessary connection betwixt causes and effects is the foundation of our inference from one to the other. The foundation of our inference is the transition arising from accustom'd union" (*ibid*.). Note that for Hume this customary transition – the "foundation of our inference" – is not something within our control.[16] Our minds just have this propensity to perform these customary transitions as the result of being *determined* to do so by the observation of "resemblance in a sufficient number of instances" (*ibid*.).

Where does all this leave the idea of necessary connection? Hume has finally unpacked the "essence of necessity" and has found that it "is something that exists in the mind, not in objects" (*ibid*.). Power and necessity "are consequently qualities of perceptions, not of objects, and are internally felt by the soul, and not perceiv'd externally in bodies" (T: 166). In his first *Enquiry*, Hume sums up his point thus:

> The first time a man saw the communication of motion by impulse, as by the shock of two billiard-balls, he would not pronounce that the one event was *connected*; but only that it was *conjoined* with the other. After he has observed several instances of this nature, he then pronounces them *connected*. What alteration has happened to give rise to this new idea of *connexion*? Nothing but that he now *feels* these events to be *connected* in his imagination, and can readily foretell the existence of one from the appearance of the other. When we say,

> therefore, that one object is connected with another, we mean only, that they have acquired a connexion in thought, and give rise to this inference, by which they become proofs of each other's existence. (E: 75–6)

But, surely, when we ascribe necessity to a sequence of events, we don't ascribe something to minds that perceive them. Nor does Hume claim that we do this: " . . . we suppose necessity and power to lie in the objects themselves, not in our mind, that considers them" (T: 167) He does, however, claim that this supposition is *false*. Indeed, he goes on to explain *why* this false belief is widespread (even inevitable). So he claims that the idea of objective necessity is *spread* by mind onto the world: "'Tis is a common observation, that the mind has a great propensity to spread itself on external objects, and to conjoin with them any internal impressions, which they occasion, and which always make their appearance at the same time as these objects discover themselves to the senses" (*ibid*.).

He adds that the "propensity" of the mind to spread itself onto the world is the "reason" why we suppose that there is necessity "in the objects we consider" (*ibid*.). In the *Enquiry*, he makes a similar point when he notes that "as we *feel* a customary connexion between the ideas, we transfer that feeling to the objects; as nothing is more usual than to apply to external bodies every internal sensation, which they occasion" (E: 78).

How, then, are we to understand Hume's position? Hume disavows the view that causation is, somehow, mind-dependent. As he (T: 168) stresses, he "allows" that "the operations of nature are independent of our thought and reasoning", as he also allows that "objects bear to each other the relations of contiguity and succession; that like objects may be observ'd in several instances to have like relations; and that all this is independent of, and antecedent to the operation of understanding" (*ibid*.).

What he does *not* allow is our going "any farther" in order to "ascribe a power or necessary connexion to these objects" (T: 169) So one might say that for Hume there is causation in the world, but if there is anything like an objective content to the talk about necessary connections in the objects, then this is exhausted by the regularities (constant conjunctions) of which they partake. And if we

think that there is any extra content in the talk of necessary connections *in* the objects, "this is what we cannot observe in them, but must draw the idea of it from what we feel internally in contemplating them" (T: 169). Hume, then, can be seen as offering an objective theory of causation in the world, which is however accompanied by a mind-dependent view of necessity. This dual aspect of Hume's account of causation is reflected in his two definitions of causation, to which we shall now turn. After we have examined them, we shall come back to the issue of what (if any) is the right interpretation of Hume's views.

1.9 Two definitions of "cause"

At the very end of his enquiry into causation, Hume suggests that it is now time to offer "an exact definition of the relation of cause and effect", which is supposed to "fix [the] meaning" of this relation (T: 169). But he goes on to offer *two* definitions that "are only different, by their presenting a different view of the same object" (T: 170). The first definition (Df_1) is "We may define a CAUSE to be 'An object precedent and contiguous to another, and where all the objects resembling the former are plac'd in like relations of precedency and contiguity to those objects, that resemble the latter'" (*ibid.*). The second definition (Df_2) runs: "A CAUSE is an object precedent and contiguous to another, and so united with it, that the idea of the one determines the mind to form the idea of the other, and the impression of the one to form a more lively idea of the other" (*ibid.*).

Surprisingly, Hume offers no further defence (or analysis) of these two definitions. He takes it that his arguments so far lead naturally to them. He does claim that the first definition is a definition of causation as a "philosophical relation", while the second is a definition of causation as a "natural relation". But, as we have already noted, he thinks that they both define the same relation. What is more interesting is that he thinks that *both* definitions entail that "there is no absolute, nor metaphysical necessity" (T: 172).

In the first *Enquiry*, where he restates the two definitions (with some interesting alterations),[17] he stresses that both definitions are "drawn from circumstances foreign to the cause" (E: 77). A "perfect" definition would point to "that circumstance in the cause, which gives it a connexion with its effect" (*ibid.*). But Hume makes

clear once more that "we have no idea of this connexion; nor even any distinct notion what it is we desire to know, when we endeavour at a conception of it" (*ibid.*). All he can therefore do is illustrate how the definitions are supposed to work by offering a typical example of a causal claim such that "the vibration of this string is the cause of this particular sound". This, it should be noted, is a claim that has the surface structure of a singular causal proposition. Although it seems to imply that what makes this sequence of events causal is something intrinsic to the sequence, Hume is adamant that what we mean by that "affirmation" is either that "*this vibration is followed by this sound, and that all similar vibrations have been followed by similar sounds*" or that "*this vibration is followed by this sound, and that upon the appearance of one, the mind anticipates the senses, and forms immediately an idea of the other*" (*ibid.*).

Hume's two definitions – and especially his puzzling remark that they are both drawn from terms "foreign" to causation – have generated quite an impressive interpretative literature that cannot be properly discussed here.[18] It seems to me, however, that we can see why (a) he has to offer two definitions; and (b) he thinks that they are both drawn from factors "foreign" to the cause. As I have already noted, Hume has aimed at a dual target. On the one hand, he has aimed to analyse causation as it is in the objects (that is, as a philosophical relation); on the other hand, he has been led to consider causation as a natural relation; namely, as a principle with which the mind operates. There is no reason to think that this is not one and the same relation. But Hume's analysis of causation as a natural relation has found in it the elements that he couldn't find in his analysis of causation as a philosophical relation. In particular, although he couldn't find in causation, as it is in the objects, anything that could correspond to the idea of necessary connection, he found the corresponding impression in his account of causation as a principle with which the mind operates.

If indeed the concept of causation he ventured to explain is one single concept, and if, in particular, its full grasp would offer "that circumstance in the cause, which gives it a connexion with its effect" (E: 77), it should be clear that Hume's dual project, namely, looking at causation as a philosophical relation and as a natural one, has failed to offer a unified account (definition) of the concept of causation. Hence, all Hume can do is offer the results of his dual

investigation – in the form of the two definitions above – and proclaim that although they are both aimed at one and the same concept, each of them offers only *some* aspect of this concept. If Df_1 was all there was to the concept of causation, then causation would have nothing to do with necessity. Construed as an exclusive definition, Df_1 is a typical version of RVC. In effect, it states that causation amounts to invariable succession. But Hume has spent most of his time trying to unravel the origin of the mysterious idea of necessary connection. So he feels that it may be objected to Df_1 that it is "drawn from objects foreign to the cause" (T: 170). For, there is no mention of necessity in it. He cannot say anything more about causation *as it is in the world*. In fact, he says that nothing more can be said. All he can then do is draw attention to another aspect of causation, as this is captured by Df_2. This does make reference to a concept of necessitation ("determination"), but it also introduces *minds* into the definition of causation. It makes a condition of an event causing another event that "a mind observes and reacts to what it observes" (Robison 1977: 160). Hume is bound to feel that Df_2, taken in isolation, is also drawn from elements foreign to the cause, not least because it *seems* to compromise the mind-independent character of causation – an aspect that was brought to light by Df_1. But he disavows any attempt to find "a juster definition" in their place. He just repeats briefly the line of reasoning that led him to the two definitions (cf. T: 170).

What needs to be stressed is that according to *both* definitions, an individual sequence of events is deemed causal only because something *extrinsic* to the sequence occurs, be it the constant conjunction of similar events, as in Df_1, or the customary transition of the mind from the appearance of the one, to the idea of the other, as in Df_2. But there is an interesting way in which each definition supplements the other. The extrinsic feature of a sequence that makes it causal according to Df_1 (i.e. the instantiation of a regularity) *is* the feature that conditions the mind to think of this sequence as necessary. And the extrinsic feature of a sequence that makes it causal according to Df_2 (i.e. the felt determination of the mind) *is* the feature of the mind that *responds* to some objective condition in the world. As Stroud (1977: 89) has pointed out, if nothing fulfilled the conditions of Df_1, that is, if there were no regularities in nature, our minds would not form the idea of causation – and especially,

the problematic idea of necessary connection. Conversely, it is because there are minds – which are such that they fulfil the conditions of Df_2 – that "any things in the world are thought to be related *causally* or *necessarily* at all" (Stroud 1977: 90).[19]

What seems to me quite striking is that, in a rather astonishing – and relatively unnoticed – passage of the first *Enquiry*, and long before he offered the two definitions, Hume made an intriguing suggestion as to *why* there is a coincidence between the conditions under which the two definitions hold. Nature, Hume says, did not leave it up to us to draw the right causal conclusions and to form the right causal beliefs, but made sure that there is

> a pre-established harmony between the course of nature and the succession of our ideas; and though the powers and forces, by which the former is governed, be wholly unknown to us; yet our thoughts and conceptions have still, we find, gone on in the same train with the other works of nature. Custom is that principle, by which this correspondence has been effected; so necessary to the subsistence of our species, and the regulation of our conduct, in every circumstance and occurrence of human life. . . . As nature has taught us the use of our limbs, without giving us the knowledge of the muscles and the nerves, by which they are actuated; so she has implanted in us an instinct, which carries forward the thought in a correspondent course to that which she has established among external objects; though we are ignorant of those powers and forces, on which this regular course and succession of objects totally depends.
>
> (E: 54–5)

What matters here is Hume's claim that, in effect, causation as it is in the objects ("the course of nature") and causation as we take it to be ("succession of our ideas") are in "harmony". In light of his subsequent discussion of the two definitions, Hume seems to suggest that nature has made it the case that Df_1 (causation as the course of nature) and Df_2 (causation as succession of ideas) go hand-in-hand. This does not mean that we don't make mistakes in calling a sequence causal. The principles of the imagination are far from "infallible". But it does mean that Df_1 and Df_2 cannot be such that they are systematically out of step with each other.

I think it is important to stress that Hume ended up with a *double-aspect* view of causation, which reflected his dual aim.[20] In this light, Stroud is right in stressing that Df_1 expresses "all the objective relations that actually hold between events we regard as being causally related" (1977: 91), whereas Df_2 expresses the *extra content* of our belief in causation – where this extra content is something that has its origin in the mind and is (*falsely*) projected onto the world.

Did Hume, then, endorse the RVC? I think there are reasons to go against the prevailing tide and argue that, to some extent at least, he did. To the extent to which we can have an account of causation *as it is in the objects*, causation can only be invariable succession. But this is not to say that what we *mean* when we talk about causation is captured by RVC. Nor did Hume think that we do. I take it, however, that one of his major contributions was to make possible an *error theory* about objective necessity: there is a belief that necessity and the cognate are objective qualities in the objects, but this belief is *false*. Do we then have to *reform* the concept of causation so that its new meaning is fully given by RVC and contains no reference to necessity? Do we have to trim down the content of the concept of causation so that it is equated with RVC? I think this is an open question. But I also feel that Hume would find this task impossible. Being a "natural relation", causation is so ingrained into our lives and modes of thinking (and so usefully so), that it would be a hopeless (and maybe pointless) task to embark on a reform of its meaning.

1.10 A new Hume?

The advocates of the "New Hume" claim that any attempt to view Hume as espousing RVC is fundamentally wrong. Indeed, there are certain passages of the *Treatise*, and especially of the first *Enquiry*, that suggest that Hume did allow that there is something, an "ultimate connection" (T: 91), in virtue of which a regularity holds, although we shall never be able to comprehend what this is. Consider some of them:

> . . . we are ignorant of those powers and forces, on which [the] regular course and succession of objects totally depends.
>
> (E: 55)

> It must certainly be allowed, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles on which the influence of these objects entirely depends. (E: 32–3)

> But notwithstanding this ignorance of natural powers and principles, we always presume, when we see like sensible qualities, that they have like secret powers, and expect that effects, similar to those which we have experienced, will follow from them. (E: 33)

> The scenes of the universe are continually shifting, and one object follows another in an uninterrupted succession; but the power or force which actuates the whole machine, is entirely concealed from us, and never discovers itself in the sensible qualities of body. (E: 63–4)

> . . . experience only teaches us, how one event constantly follows another; without instructing us in the secret connexion, which binds them together, and renders them inseparable. (E: 66)

For some, such as Mackie (1974: 21), Hume "may well have his tongue in his cheek" when he makes assertions such as the above. But Strawson thinks that he did not. Strawson calls "Causation" (with a capital C) a view of causation that is substantially distinct from RVC. To believe in Causation is to believe "(A) that there is something about the fundamental nature of the world in virtue of which the world is regular in its behaviour; and (B) that that something is what causation is, or rather it is at least an essential part of what causation is" (Strawson 1989: 84–5). Given that most present-day Humeans deny both (A) and (B), we can call Strawson's view non-Humean. Yet his startling suggestion is that Hume too was non-Humean. On Strawson's reading of Hume, Hume "never seriously questions the idea that there is Causation – something about the nature of reality in virtue of which it is regular in the way that it is – although he is passionate and brilliant in his attack on the view that we can know anything about its nature" (1989: 204).

Michael J. Costa has introduced a useful distinction between *causal objectivism* and *power realism*. The former is the view that "causes are objective in the sense that causal relations would continue to hold among events in the world even if there were no minds to perceive them" (1989: 173). The latter is the view that "objects stand in causal relations because of the respective causal powers in the objects" (*ibid*.). Now, causal objectivism is perfectly consistent with – if it is not directly implied by – RVC. And there has also been ample reason to think that Hume was a causal objectivist. So the question is whether Hume was a power realist.

There is an important hurdle that the power-realist interpretation of Hume should jump: his theory of ideas. It is one thing to argue – quite plausibly – that Hume's theory of ideas (and in particular his Basic Methodological Maxim) is wrong.[21] It is quite another thing to argue that Hume did not, really, endorse it. Craig (1987: 91) does make a first move towards this bold claim: Hume's "theory of belief is more important than his theory of ideas". But even if this is so, that is, even if Hume was primarily concerned with the origin of our natural belief in causation, he didn't seem to leave behind his theory of ideas. So the next step taken by the advocates of New Hume is to stress a distinction that Hume seemed to have drawn between *supposing* that something is the case and *conceiving* that it is the case.

Both Craig (1987: 123–4) and Strawson (1989: 49–58) argue as follows. Hume's official theory of ideas relates to what can be properly conceived. Anything that can be properly conceived, that is, anything of which we have a contentful idea, must be based on impressions. It should be, in fact, copied from impressions. But, they argue, Hume also has a theory of "supposition", which is distinct from his theory of ideas. We can suppose that something is the case and form an intelligible view of it, even if this "supposition" is not "contentful (or intelligible) on the terms of the theory of ideas" (Strawson 1989: 54). Strawson, in particular, claims that "the special limited theory-of-ideas-based notion of 'intelligibility' is essentially supplemented by the notion of what is intelligible in the sense of being coherently supposable" (1989: 58). Both Craig and Strawson go on to claim that Hume did allow that we can "suppose" the existence of powers, or of necessity, where this is a "genuine supposition" (Strawson 1989: 45), and far from being

"senseless" (Craig 1987: 124). Strawson claims that Hume's theory of "supposition" allows him to form a "relative" idea "of true causal power or force in nature". This "relative" idea gets its content from the following description: "whatever it is in reality which is that in virtue of which reality is regular in the way that it is" (1989: 52). What is more interesting is that, according to Strawson, the above description allows us (and Hume, in particular) to "refer to [causal power] while having absolutely no sort of positive conception of its nature on the term of the theory of ideas" (*ibid.*).[22] So, both Craig and Strawson conclude, Hume was a causal realist. He was a sceptic about our having a positive conception of powers in nature in so far as this scepticism sprung from his theory of ideas. Nonetheless, he believed in the existence of these powers and he propounded that we can coherently *suppose* that they exist.

This summary of the Craig–Strawson interpretation has been very brief. Their account deserves much more attention than I have given it. Its main philosophical suggestion, that one *can* be a non-Humean causal realist in the strong sense of admitting the existence of something in virtue of which regularities hold, is well taken. As we shall see in some detail in Chapter 6, there is indeed a non-Humean philosophical school, which tries to explain why regularities hold by positing the existence of relations of necessitation between properties. But the present question is whether *Hume* was a non-Humean causal realist. Did he really take the view that Craig and Strawson attribute to him?

This view has been challenged in two ways. The first is by Winkler (1991). He has offered a very careful study of all the passages that might suggest a realist interpretation of Hume, and has – I think, persuasively – argued that the hurdle that the causal realist interpretation of Hume should jump, namely, his theory of ideas, is insurmountable. In particular, he claims that the distinction between "supposing" and "conceiving" is not well founded: "an interest in *acts of supposing* or *relative ideas* is no sign that we have moved into territory where the theory of ideas does not hold sway" (1991: 556). For Winkler, in order to preserve Hume's scepticism it is enough to suppose that he refused to *affirm* the existence of something other than regularity in nature, "a refusal rooted in the belief that there is no notion of Causation [in Strawson's sense] to be affirmed (or denied, or even entertained as a possibility)" (1991: 560).

The second way to challenge the realist interpretation of Hume has been offered by Simon Blackburn (1984: 210). To be sure, he does also challenge the received view, by arguing that Hume was far from trying to analyse the *concept* of cause in terms of regular succession. But, on Blackburn's view, the causal realist interpretation is no less mistaken. For, as he claims, the causal realist interpretation enforces on Hume the desire "for a Straightjacket on the possible course of nature: something whose existence at one time guarantees constancies at any later time" (1990: 241). Hume, he notes, warned us exactly against the possibility of apprehending such a Straightjacket: "we have no conception of it, nor any conception of what it would be to have such a conception nor any conception of how we might approach such a conception" (1990: 244). On the positive side, Blackburn takes Hume to be a "projectivist". Our everyday life includes causal behaviour: we draw causal inferences, speak of an effect following with necessity from a cause, and so on. Following Craig (2000: 114), let's call this our "everyday business of 'causalising'". Now, Blackburn argues that Hume was after an *explanation* of this everyday business. But the distinctive interpretative line that Blackburn follows is that Hume was a "projectivist" about causal necessity. When we dignify a relation between events as causal we really "spread" or "project . . . a reaction which we have to something else we are aware about the events"; namely, the regular succession of similar events (1984: 210–11). According to Blackburn, Hume explained the "causalizing" behaviour by this projective theory of necessity. Although the reality that triggers this behaviour "exhibits no such feature [of necessity]", Hume shows how we can still make sense of our "normal sayings" and "our normal operations" with this concept.[23]

It is time to bring this long chapter to a close. The "New Hume" debate has certainly advanced our understanding of Hume.[24] But it is still inconclusive. What matters is that, even if Hume was not, *very strictly speaking*, a Humean, he made Humeanism possible. In particular, he made RVC possible. In the subsequent chapters, I shall turn my attention to Humeanism and its critics.

Notes

Introduction

1. Russell (1918: 180). For a criticism of Russell's views, see Lipkind (1979) and Kline (1985). Russell revised his views in his *Human Knowledge* (1948).
2. Mellor calls these platitudes "the connotations of causation". Menzies takes them to analyse the *concept* of causation, whereas Armstrong thinks that they fix its *reference*. Besides, not all philosophers agree that these are genuine platitudes. These issues are orthogonal to the use I make of these platitudes, and hence I won't discuss them.
3. The idea that causes are "recipes" goes back to Gasking (1955).
4. Menzies (1996) takes the intrinsic-relation intuition to be a platitude of causation. But it is too controversial to be a platitude. Armstrong (1999) stresses the role of regularity among the platitudes of causation.

Chapter 1: Hume on causation

1. *A Treatise of Human Nature* will be designated "T". *An Enquiry Concerning Human Understanding* will be designated "E". *An Abstract* to *A Treatise of Human Nature* will be designated "A". All page references will be to pages in the Selby-Bigge editions of Hume's works.
2. For a learned account of the theories of causation before Hume, as well as for an account of Hume's reactions to them, see Clatterbaugh (1999).
3. For more on Hume's distinction between "philosophical" and "natural" relations, see Stroud (1977: 89) and Robinson (1962).
4. Hume analyses conceivability in terms of the distinctness of ideas. Since "all distinct ideas are separable from each other" (T: 79), we can conceive the one without the other (or, we can conceive the one with the negation of the other). In particular, since the idea of a cause is distinct from the idea of an effect, we can conceive the one without the other. However, as Stroud (1977: 48–50) argues, Hume seems to run in a circle here. For he starts with a conception of distinct ideas in order to show that being distinct, the idea of the cause and the idea of the effect make it *conceivable* that the cause might not be followed by its usual effect. But what makes two ideas distinct other than that the one can be *conceived* without the other? So Hume does not seem to have an independent criterion of distinctness of ideas, which can then be used to found claims of

conceivability and inconceivability.

5. Fogelin (1985: 46) has aptly called Hume's strategy at this juncture "*the no-argument argument*".
6. Hume stresses that an appeal to "powers" is bound to fail for three reasons (cf. T: 91). (a) A "power" is not a "sensible quality" of a thing, like being red or square. Why then should we suppose that it exists? (b) Even if we suppose that it exists, it can only be detected by the presence of other sensible qualities of a thing. But why, Hume asks, do we have to suppose that whenever certain sensible qualities are present, the power is also present? (c) Why should we assume that all occurrences of the same class of sensible qualities associated with a thing are accompanied by the instantiation of one and the same power? Hume's objections are all motivated by the same theme: the existence of powers in objects is not a demonstrative truth. And if it is meant to be justified on the basis of experience, then we run against the problem of circularity that we had with the Principle of Uniformity of Nature. Hume's critique of powers is repeated in his first *Enquiry* section IV, part II.
7. These ideas have been influenced by Stroud (1977: 59–63). He (1977: 60) rightly takes the demand of second-order justification of the rationality of a mode of inference to be *constitutive* of the traditional conception of reason. Demonstration and intuition were taken, by Descartes and almost anyone else, to be immediately justified by virtue of the fact that their second-order justification was transparent to the mind. Presumably, that demonstration is a rational method of inference was seen immediately by reflection. But even if all this is granted, causal inference fails to meet this criterion of second-order justification.
8. Stroud (1977: 64–5) rightly dismisses the view that principle (*R*) is an analytic truth.
9. This objection to Hume has been forcefully made by Stove (1965). Stove argues that Hume offers no argument against what Stove calls "Inductive Probabilism" (IP); namely, the thesis that there are probable inductive arguments. Stove claims that "Hume's refutation of IP is an entirely imaginary episode in the history of philosophy" ([1965] 1968: 189). For a critique of Stove's account of Hume, see Fogelin (1985: 154–7).
10. For a relevant discussion see Gillies (2000: Ch. 3).
11. We could, as Carnap (1950) in effect does, put a premium on *E* as opposed to any of the E_is, based on the fact that, in the past, *C*s have been associated with *E*s. But what can justify this premium if not the claim that the future is more likely to be the same as the past than not?
12. Hume makes no space for synthetic a priori principles, that is, of principles that are synthetic (i.e. refer to matters of fact) and are ascertainable (knowable) a priori. In a famous passage of the *Enquiry* (E: 25) he says: "All the objects of human reason or enquiry may naturally be divided into two kinds, to wit, *Relations of Ideas* and *Matters of Fact*". Relations of ideas "are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe" (*ibid.*). Matters of fact "are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing [relations of ideas]. The contrary of every matter of fact is still possible; because it can never imply a contradiction, and is conceived by the mind with the same facility and distinctness, as if ever so conformable to reality" (E: 25–6). So relations of ideas belong to the realm of reason and are knowable a priori, whereas matters of fact belong to the realm of experience and are knowable a

posteriori. This bifurcation leaves no space for a third category of synthetic a priori principles. Immanuel Kant (1787, B5, A9/B13, B124) did, famously, make space for synthetic a priori judgements and, unlike Hume, thought that causal inference does constitutively involve some kind of necessity which is like necessity$_2$, but synthetic a priori in character. There is a massive literature on Kant's views on causation. An important recent piece that discusses the relation between Hume and Kant is Falkenstein (1998).

13. A critical account of Mackie's reading of Hume is given by Beauchamp & Rosenberg (1977: 373–9).
14. This aspect of Hume's account was first stressed by Kemp Smith in his monumental work on Hume (1941). Indeed, Kemp Smith was the first philosopher to bring to focus this naturalistic element of Hume's philosophy. He notes:
"This observation of repeated sequence generates – *causally* generates – in the mind a custom or habit. This custom or habit, in turn, itself generates – again in a *causal* manner – the feeling of *necessitating* transition; and it is upon the pattern of this impression that our ideas of causal connexion have come to be modeled" (1941: 373).
Kemp Smith's approach has also been adopted by Stroud (1977: 92) and by Fogelin (1985: 48–9).
15. Stroud (1977: 92–3) goes on to argue why Hume's critique of causation does not create problems for his own *causal* theory.
16. Has Hume here confused two distinct senses of "foundation", the first being logical and the second psychological? Not really. As Craig (1987: 85) has rightly observed, Hume here states one of "the most basic points of his philosophy"; namely, that "where philosophers thought that they saw the operations of reason, the divine spark at work in man, they were watching nothing more than a mundane mechanism and its natural effects in the mind".
17. The first definition runs thus: "we may define a cause to be *an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second*" (E: 76). Note that the requirement of spatial contiguity has faded away from this definition, although the requirement of temporal succession has remained. As for the second definition, it goes as follows: "*an object, followed by another, and whose appearance always conveys the thought to that other*" (*ibid.*). Note that in the wording of the second definition, the reference to "determination" has been dropped.
18. There have been three major interpretative strategies. The *first* is to argue that Hume intended only one of the two definitions as the *proper* definition of causation. The *second* is to try to show that the two definitions are, essentially, equivalent. The *third* is to deny that either of the two is a proper definition.

    Among the followers of the first strategy there is a division between those who take Hume to have held only Df_1 as the proper definition of causation and those who take him to have asserted only Df_2 as the proper definition. According to Robinson (1962), Hume was a defender of RVC. He then takes it to be the case that Hume was in "error" when he offered Df_2 *as* a definition of causation. (Robinson's account is criticized, not altogether successfully, by Richards (1965). See Robinson (1968) for his reply.) Kemp Smith (1941), on the other hand, was among the first who emphasized that Hume was not a defender of RVC. So he is among those who argue that the only proper definition of causation is Df_2. In defending Df_2, Kemp Smith (1941: 401) makes the startling suggestion that Df_2 is really an "ostensive" definition. Hume is said to invite us to

see what causation is by looking at the *causal* connections between some events in our imagination.

Among those who take Hume to have offered two strict – and ultimately equivalent – definitions of causation the most notable attempt is by Garrett (1993). Concerning Df_2, Garrett argues that the reference that it makes to the mind can be construed as a reference to a "generalised or 'ideal' mind or spectator" (1993: 180). But Garrett's key move is to argue that, far from involving no reference to necessity, Df_1 can be seen as a way to "comprehend" the necessary connection between causally related events – even if, for Hume, the idea of necessary connection turned out to be something other than what was expected. For Garrett, where Df_2 "characterises the set of *ideas* that give rise to the internal impression of necessary connection directly", Df_1 "characterises the same set indirectly, by characterising the *objects* whose ideas give rise to this impression" (1993: 184). So both Df_1 and Df_2 are taken to be exact definitions of the very same notion, and in particular of the concept of causation as involving the idea of necessity.

Finally, Stroud (1977: 89) argues that neither of the two definitions should be seen as a proper definition in the sense of defining the meaning of '*C causes E*'.

19. Stroud (1977: 90–91) rightly stresses that Hume leaves entirely open the possibility that there might be beings whose minds are not constituted like ours, and which therefore lack the idea of necessary connection.
20. A similar view is suggested by Beauchamp & Rosenberg (1981: 28–31).
21. For a telling criticism of Hume's theory of ideas, see Stroud (1977: 229–30).
22. A similar thought is expressed by Broughton (1987). She, however, stresses that all we can attribute to Hume is that we can achieve "the *bare thought* . . . of there being some feature of objects that underlies . . . constant conjunction" (1987: 126).
23. Craig (2000) argues that Hume might be seen as being *both* a realist and a projectivist.
24. Important articles on the New Hume debate can be found in Read and Richman (2000).

Chapter 2: Regularities and singular causation

1. The word *factor* is used as a catch-all term to cover causal antecedents. Depending on one's philosophical preferences, one can substitute either *property* or *event-type* for *factor*.
2. Mill (1911: 218) does try to explain how this claim about counteracting *causes* does not affect his account of causation.
3. If unconditionality fails, Mill (1911: 253) notes, then "both the antecedent and the consequent might be successive stages of the effect of an ulterior cause".
4. Unlike Mill, Ducasse (1969: 20) thinks it *does* make sense to distinguish between *the* cause of an effect and its conditions.
5. While Ducasse accepts that causal laws are regularities, it is possible for an advocate of singular causation to take causal laws to be of a different sort. Indeed, David Armstrong (1997) does accept the existence of singular causation and yet takes causal laws to be relations among universals. (His views are examined in some detail in Chapter 6.)
6. For a more sympathetic – yet also critical – reading of Ducasse's views, see Mackie (1974: 135–42).
7. This claim can be contested. There has been some interesting experimental work

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