

## **Hume's two causalities and our ability to organise for the future: moon rocks, transfactuality and the UK's policy on school absenteeism. Pre-print version.**

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Hume maintained that, philosophically speaking, there was no difference between exiting a room out of the first floor window or using the door. Nevertheless, Hume's reason and common sense prevailed over his scepticism and he advocated that nevertheless, we should always use the door. However, we are currently living in a world which is more seriously committed to the Humean philosophy of empiricism than he was himself and thus the potential to act inappropriately is an ever present potential. In this paper, I explore how Hume's two versions of causality have detrimentally affected our ability to both arrive at, and to use, research to improve human well-being. I illustrate my argument with an example of what I think is an incorrect yet supposedly scientifically sound assumption: that absenteeism causes poor school attainment. To ground an alternative to Humean empiricism, I introduce the critical realist idea of transfactuality. Using the example of research into moon rocks, I show how mainstream science uses transfactuality despite its empiricist aversion to it. I also put forward that it is our honesty, integrity and stoicism that lead us to the extreme overthrow of reason and common sense that we see today in many of the UK's social policies; an overthrow that Hume himself did not achieve. Metaphorically speaking, British professionals, stoically and honestly believing in the ability of their trusted research correlations to guide their action, are exiting out of the first floor window rather than using the door. This is a significant barrier to our ability to organise for the future.

**KEY WORDS** Hume's two causalities, constant conjunctions, fact/value distinction, absenteeism, education policy, transfactuality, scientific method, school attainment

If we take Hume's canonical dictum that things '*seem conjoined but never connected*' it appears that, for Hume, there was no way to truly understand causality.<sup>1,2</sup> Critical realists disagree and maintain the opposite; that things are connected and are best viewed as internally related totalities.<sup>3</sup> We therefore can provide causal explanations for things.<sup>4</sup> Another of Hume's claims considered to be mistaken by critical realists is his idea that there can be no fact to value transitions, known as the fact/value distinction. Because Hume did not think that it was possible to identify causality (although this did not stop us from imagining it) he therefore thought that there was no ontological basis for moving from facts to guidance for our actions (values). For Hume, causal connections of constant conjunctions were an illusion and therefore hardly a reliable guide to action. Given Hume's assumption about the lack of causal connections, one can fully understand why he should write '*Be a philosopher;*

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<sup>1</sup> Hume [1711 – 1776] 2007, 69.

<sup>2</sup> Although some might argue that Hume did not actually mean this (Beebe, 2006), it is nevertheless a mainstream interpretation of Hume's position and this paper is concerned with the effect of standard versions of Humean empiricism on social science's role in policy.

<sup>3</sup> "To grasp totality is to break with our ordinary notions of identity, causality, space and time, justified by the 'analogical grammar' of the classical mechanistic corpuscularian world view that I have criticized elsewhere. It is to see things *existentially constituted*, and permeated, *by their relations with others*... It is to see the causality of a upon b affected by the causality of c upon d." (Bhaskar [1993] 2008: 125)

<sup>4</sup> Groff 2009.

*but amidst all your philosophy; be still a man*<sup>5</sup>. When leaving a first floor room, Hume set aside his philosophical persona and, guided by his previous experience of gravity, he always exited by the door, not the window. Nevertheless, and contradictorily (because here Hume assumes that we can infer causality from constant conjunctions), he also said (2007: 129):

In a word, I much doubt whether it be possible for a cause to be known only by its effect (as you have all along supposed) or to be of so singular and particular a nature as to have no parallel and no similarity with any other cause or object, that has ever fallen under our observation. It is only when two species of objects are found to be constantly conjoined, that we can infer the one from the other; and were an effect presented, which was entirely singular, and could not be comprehended under any known species, I do not see, that we could form any conjecture or inference at all concerning its cause.

It is well acknowledged that Hume had two theories of causality.<sup>6</sup> On the basis of statements such as the one given above, he claimed that we can only know causality through temporal priority (an effect must follow from a cause), contiguity (close proximity of one to the other) and constant conjunction (one event follows another). Therefore our causal talk and thought, whilst perfectly possible, all the same cannot refer to anything other than constant conjunctions, which excludes the possibility of us understanding the causes of one off events (Beebee, 2006:108). Here Hume seems to take for granted that there are necessary connections or ‘secret powers’ in nature: that there is something that lies behind the regularities upon which the regular course and succession of objects total depends (ibid: 9). This theory of causal laws, closely associated with regularity determinism and deductivism, has become the corner stone of mainstream scientific method (Bhaskar, 1993). Contradictorily, Hume nevertheless also held that it is incoherent to assume a necessary connection to external events, specifically constant conjunctions. The fact-value distinction is squarely predicated on the latter idea.<sup>7</sup>

In this paper I will justify my position that the contradictions in Humean empiricism make it inadequate as a basis for evidence-based science by referring to the UK’s educational policy on absenteeism. I will go on to offer a ground for an alternative to Humean empiricism, specifically the critical realist use of the idea of transfactuality<sup>8</sup> and I will try to explain what I mean by transfactuality by referring to research on moon rocks. I will explain how transfactuality avoids the mistakes of Humean empiricism, resulting in knowledge that is more likely to be truthful and less likely to be reductive. I assume that knowledge that is both truthful and acknowledges complexity helps to ensure the efficaciousness of our actions to improve society and to plan for the future.

### **Humean empiricism is an inadequate ground for evidence-based policy**

It is ironic that despite the central role given to Hume’s regularity determinism and deductivism in mainstream science — which is based on the assumption that we *can* theorise

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<sup>5</sup> Hume [1711 – 1776] 2007, 6.

<sup>6</sup> Beauchamp 1973; Beebee 2006.

<sup>7</sup> According to Beebee (2006: 94-95) Hume’s two definitions of causation, slightly paraphrased, are: (Definition 1) Event *c* is a cause of event *e* if and only if *c* precedes and is contiguous with *e* and (1) *Cs* (that is, events similar to *c*) are constantly conjoined with *Es* (events similar to *e*). (Definition 2) Event *c* is a cause of event *e* if and only if *c* precedes and is contiguous with *e* and (2) the idea of *c* determines the mind to form the idea of *e*, and the impression of *c* determines the mind to form the belief in *e*.

<sup>8</sup> Once we have established the need for transfactuality, we can make use of Bhaskar’s DREI(C) method of theoretical science. This is a process of description, retrodution (which will result in perhaps several theories of the phenomena) and elimination (the process of choosing amongst competing theories). It includes the moment of identification (of the chosen theory) and then correction, as the theory is tested in practice (1993:109,110).

causality from constant conjunctions — Hume is also commonly associated with the fact/value distinction which is a development of the assumption that one *cannot ever* (technically — although one can psychologically) theorise causality from constant conjunctions. When one accepts the fact/value distinction, one is by implication denying that causality can explain constant conjunctions; when one accepts that causality is a possible interpretation of constant conjunctions, one is by implication denying the fact/value distinction.<sup>9</sup>

Ideologically, this contradiction is useful for policy-makers. It means that apparently without contradiction (even though the contradiction is implicit) they can assume causation or a lack of causation whenever it is convenient. This position, whereby one can choose between the positions that a correlation is a) causal or b) not causal, on the basis of nothing more than slippery epistemological assumptions – rather than the evidence – is also useful for denying the validity of critical voices without having to engage in the content of the critique. If an authority does not like a critical, correlation-based argument, it can use the “correlation does not equal causation” position to detract from the argument. Alternatively, it can refer to the assumption that just because there is a correlation, this does not lead to implications for action (values).

Despite its contradictions, Hume’s deductive hypothesis and inference of causality is found in most versions of the scientific method, sometimes varied to include the idea of the null hypothesis, a qualification supplied by Karl Popper.<sup>10</sup> In any newspaper, scientific journal or policy discussion paper where research is quoted, it is likely to include a statement about a correlation that was found to be statistically significant. If the reporter was scientifically naive, this factual correlation may be described simplistically as causal, for example, schools minister Nick Gibb (quoted by the BBC, 14 June 2012) stated: “Whatever the reason for a child’s absence from school, the data shows that when children miss a substantial part of the school term their academic achievement suffers permanently”. However, deductivist scientists are wary of assuming that correlations, even strong ones, imply causation, especially in an open-system social context. Yet despite this, correlations are not only socially sanctioned as indicators of causation, they are ultimately given human-like decision making powers. Policy makers, it can be argued, apparently defer their decisions to correlations. This is what Bhaskar calls ‘the fetishism of empirical regularities (of constant conjunctions of events)’.<sup>11</sup> It is assumed that, despite their imperfections, correlations are nevertheless all that we have and therefore there is no alternative but to be guided (or more strongly, told what to do) by them. However, this is incorrect and as I hope I have shown, it is merely an ideological sleight of hand. It is not the correlations that are making the decisions; it is the policy-makers. The latter decide which correlations to assume are causal whilst pretending that their decisions are forced by some benevolent, magical characteristic of scientific research.<sup>12</sup>

### **An alternative to Humean empiricism**

However, there is an alternative to fetishism about empirical regularities and this alternative was overlooked when Hume suggested that we cannot know a cause from its

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<sup>9</sup> This oscillation is perhaps a consequence of Bhaskar’s ([1993] 2008: 402) ‘primal squeeze’ which is “the squeeze between the domains of metaphysics (cf. the speculative illusion) and the a priori, and those of experience (cf. the positivistic illusion) and the a posteriori, ruling out empirically controlled scientific theory and natural necessity alike.” This oscillation is, I think, also reflected in the pmo flips described by Sayer (1999: 31) who stated that: “The primary ‘pomo-flips’ are from naive objectivism to idealism, from grand narratives to local knowledges and from ethnocentrism to cultural relativism.”

<sup>10</sup> Popper [1963] 2002.

<sup>11</sup> Bhaskar [1993] 2008.

<sup>12</sup> Price 2014.

effect and that we can never infer the cause of a single event. Critical realists would say the opposite, that we can know a cause from its effect and that we can infer what has caused an event even if we have only one example of that event to go on. For example, we might infer the cause of global warming as being due to the historical activities of humans, even though we have only a single Earth experiencing this effect. Indeed, critical realists would go so far as to say that we can even know that something might potentially cause something else, even if there has not to date been an actual example of the thing that might potentially be caused. Critical realists advocate an alternative to Humean empiricism that includes the ideas of transfactuality and emergence, although for the sake of simplicity I will here concentrate primarily on transfactuality (which nevertheless implies emergence). Despite the absence of transfactuality from high school and college classes on the nature of scientific method, it is a corner stone of science. One way to describe transfactuality is to say that it suggests that the laws of nature exist independently of the systems in which they occur. It depends on the idea of reality as layered, with higher order layers emergent from lower order ones.<sup>13</sup> Hume arrived at the conclusion that we cannot infer causation from a single event because of his mistaken assumption that nothing can be real if it is not material, that is, he did not have recourse to the idea that reality is layered and emergent. However, even if all matter were to disappear from the universe, the transfactual law of gravity would still exist. It would be real even if it was not materially actualised in the behaviour of, say planets orbiting stars. We might therefore say that the law of gravity exists independently of the system in which it occurs. Nevertheless, for Hume, since only material things are real, only measurable constant conjunctions of material things can allow us to infer causality. However, it is more appropriate to assume that constant conjunctions are a subset, and not a particularly reliable one in open systems, of useful kinds of evidence that we can use to infer causal relationships.

### **Moon rocks and transfactuality**

Scientists' understanding of moon rocks is a case in point. Because scientists had knowledge of the natural transfactual laws governing the formation of rocks, derived from their study of Earth's rocks, they were already equipped with knowledge about moon rocks before any such rocks had been made available for study. For example, before the Apollo Mission to the moon, in which samples of moon rocks were collected, scientists were fairly certain that there would be no sedimentary rock on the moon, since sedimentation is a process that requires the movement of materials such as water and wind, and neither of these is present on the moon due to its lack of an atmosphere. As one scientist put it "if a rock has layers, it is not a moon rock".<sup>14</sup> Furthermore, scientists are today confident to make highly generalised statements about moon rocks, their composition and the causes of their particular characteristics, despite having only seen rocks from three sites on the moon and despite having not actually witnessing the events that caused the rocks. For example, they claim that 17% of the rock on the moon consists of basalts derived from volcanic activity (no longer happening) that occurred over a period of about 2 million years.<sup>15</sup> Essentially, they have done exactly what Hume denied was possible; they have inferred causes from single objects. These scientists do not feel the need to support their knowledge with statistically significant correlations, which might look something like this:

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<sup>13</sup> Price 2014.

<sup>14</sup> Korotev 2012.

<sup>15</sup> Korotev 2012.

*According to research, based on samples collected from 1000 moons picked randomly from solar systems in the universe, there is a correlation between volcanic activity and the existence of basaltic rock ( $P < 0.01$ ). Based on this correlation, scientists claim that there is good reason to assume that the basaltic rock on our moon was caused by volcanic activity.*

On the contrary, scientists can confidently assume that the basaltic rock was caused by volcanic activity because of the transfactual knowledge that only molten magma cooling quickly at the surface could possibly account for the chemical and structural composition that defines basaltic rock.

### **Consequences of Hume's two causalities: the case of the UK's policy of school absenteeism**

The incorrect but socially sanctioned Humean empiricism and its associated assumptions of what counts as legitimate inferences of causality has had unfortunate consequences for social science-based policy. A well-known example of assuming causality where none existed is the medical advice of the 1960s, whereby parents were told not to allow their children to eat ice cream because of the correlation between eating ice cream and getting polio.<sup>16</sup> In fact, the correlation between ice cream and polio was because both eating ice-cream and getting polio were more likely to happen in summer due to the warm weather. In this case, the incorrect assumption of causation most likely did no great harm. The correlation that I am concerned about in this paper, which I think is not causal but which has been used to support very powerful legislation, and which I think is having unfortunate consequences, is the assumption that absenteeism causes poor school attainment. Research commissioned by the Department for Education and Skills showed a strong correlation between achievement in school and attendance.<sup>17</sup> Nevertheless, the research statisticians also stated:<sup>18</sup>

We cannot tell from the associations identified ...whether the increased likelihood of low levels of attainment with higher levels of absence are the direct result of poor attendance, whether poor prior attainment has led to poor attendance or whether some other factor, not included in the modelling process, is having a significant impact.

Prior to this research, a transfactual theory was dominant amongst educators which assumed that absenteeism and poor attainment were symptoms of poverty and attitude. If anything absenteeism was caused by poor attainment, rather than the other way around. For example, some research from 1989 stated:<sup>19</sup>

Persistent school absentees tend to be more likely to come from low social class backgrounds and to be brought up in larger families, in poorer housing, in low income families and amongst families who are deprived in a number of other ways. They are also more likely to have come from broken homes or split family situations. Thus, many persistent school absentees are nurtured on a diet of squabbles and deprivation at home and repeated failure at school. The latter situation is exacerbated by the fact that school absentees tend to have below average levels of intelligence, attainment and interest in their school or school work.

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<sup>16</sup> Lawrence 1962.

<sup>17</sup> Morris and Rutt 2005.

<sup>18</sup> Ibid v.

<sup>19</sup> Tattum and Lane 1989, 89.

The theory that absenteeism is not causal of other problems, but symptomatic of them, is supported by the following facts also reported in the same research commissioned by the Department for Education and Skills reported earlier:<sup>20</sup>

- There was no correlation between attendance and attainment in non white students. Although on its own this fact does not automatically discount a causal relationship between attendance and attainment, as there could be other factors that are preventing the causal relationship from being manifest, it at the very least implies the need for a less reductive theory that includes other factors.
- There was evidence that the correlation between absence and attainment was highest in boys, who also demonstrated poor attitudes towards attendance. This supports the transfactual theory that attitude, not attendance, was an underlying cause of poor attainment.
- There was a correlation between absence and receiving school meals (poverty). This supports the transfactual theory that poverty was a cause of both absence and poor attainment, and thus attendance was not an underlying cause of poor attainment. In the same way, eating ice cream was linked to polio but only because both eating ice cream and being infected with polio was linked to hot weather.

Note how I am not completely against the use of correlations to arrive at causal explanations. Correlations are facts, but they need to be placed into the larger (transfactual) picture and their significance or lack of significance must be determined by both reason and common sense. Therefore, similar to mainstream scientists, I am happy to use correlations as evidence for theory-making. However, unlike mainstream scientists, the kind of theory-making that I support arrives at explanations of the evidence by including not only correlational evidence but also one-off events and case study evidence. It also assumes the existence of real, transfactual structures and mechanisms. Fleetwood and Hesketh usefully call this critical realist, interdisciplinary approach to complex causality ‘robust explanation’. They refer to Humean causality as ‘emaciated explanation’.<sup>21</sup>

### **Judgemental rationality**

In this example, the competing theories are: a) an emaciated explanation in which absenteeism causes poor attainment – the correlation of absenteeism with attainment is considered causal;<sup>22</sup> and b) a robust explanation in which the correlation of absenteeism with attainment is not assumed to be causal – at most absenteeism is assumed to be an aggravating symptom, which along with poor attainment is emergent from a broad spectrum of structural considerations, such as poverty, attitude and other social inequalities. Critical realists base their judgement of whether or not a theory is true on its ability to out-perform competing theories in explaining the evidence, called judgemental rationality. I argue that in this example of the causes of poor attainment, the interdisciplinary transfactual explanation is better (both less reductive and more true) than the constant conjunction explanation.

This process, of choosing between one or more competing theories, known as judgemental rationality, is not optional in critical realist versions of science. Its presence also keeps the scientific process transparent. To help to prevent ideologically-influenced decisions (supposedly based on neutral science), social scientists should devise and implement a

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<sup>20</sup> Morris and Rutt 2005.

<sup>21</sup> Fleetwood and Hesketh 2006.

<sup>22</sup> Some popular writers flesh out this emaciated theory with the idea that absenteeism causes low attainment because of lost instruction, but mostly the causal relationship is left as self-explanatory.

standard procedure for ensuring a process of judgemental rationality. This process should be publically available for scrutiny.

### **Acceptable and unacceptable options for policy-makers and researchers to avoid responsibility for mistakes**

At the moment, policy-makers avoid responsibility for mistakes by ensuring that all of the policy that they devise is evidence-based (read: based on correlations) but as I have shown, this is highly questionable as a guide for sound policy and easily corrupted. Statisticians essentially end their work at the point of identifying correlations. They avoid responsibility for mistakes by including the disclaimer that their correlative findings cannot be assumed to indicate causality. Based on the pervasive idea of the fact/value distinction they prefer not to move towards possible suggestions for action that their research might indicate. They would rather leave this up to the policy-makers who, because they are not scientists, can (perhaps?) justify their assumption of causation and their move from facts to values on the basis of their (feigned?) ignorance of scientific method. Instead, policy-makers should act on scientific research that has been through a rigorous process of publically-witnessed judgemental rationality. Scientific research may or may not include correlational statistics – it could also include case studies and one-off events – but most significantly it should be grounded in transfactual theory that suggests causal mechanisms and structures. The most qualified people to arrive at the transfactual theories will possibly be the scientists themselves, but the public nature of the debate will mean that potentially any citizen interested in the process can educate themselves on the relevant issues and contribute in a meaningful way. The decision-making process is thus transparent and the policy-makers reduce their liability through ensuring this transparency. If a mistake is made, the public cannot argue that decisions were made without their full awareness, and unpopular interpretations, pointing to difficult decisions, can be presented openly to encourage debate. Such public debate is a vital component of a functioning democracy.

In our case study of the absenteeism/attainment correlation, despite the researchers themselves clearly questioning that their results can legitimately be used to assume that attendance causes low attainment, strict instrumentalist legislation was introduced into schools in 2006 which aimed to reduce absenteeism as a way of improving attainment. The legislation was known as *The Education (Pupil Registration) (England) Regulations*.<sup>23</sup> It made parents liable to fines of up to £2500 and even imprisonment if their children did not attend school regularly. In 2009, it was reported that a parent was jailed in the UK every fortnight for their child's truancy.<sup>24</sup> In 2013 the Ministry of Justice revealed that more than 10 000 parents had been given a criminal record as a result of their child's absence from school.<sup>25</sup> Whilst of course students must attend school, nevertheless, using educational resources to impose a strict yet incorrectly theorised policy to achieve this aim was not only wasteful of those resources but in this case was also unjust; families already struggling were the most negatively affected. The problem is that the designers of the legislation assumed instrumentally that the barrier to attendance was simply behavioural on the part of the parents. Because attendance was the focus (and yet was most likely a symptom, not a cause) the actual cause of poor attendance and poor attainment was not addressed. Thus individual families with certain material or psychological barriers to attendance have not been helped to over-come these barriers. For example, children often exhibit school avoidance behaviour because they do not have the right clothes due to poverty. Children may also refuse to go to

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<sup>23</sup> Education (Pupil Registration) (England) Regulations 2006.

<sup>24</sup> Coughlan and Westhead 2009.

<sup>25</sup> Harris 2013.

school because they are already failing their classes and they feel embarrassed by their failure or because of bullying.<sup>26</sup> Other reasons that students do not attend include: that they are a carer to a person with medical problems; that they live in a dangerous area and are afraid to walk to school; that they do not see the point of getting an education; or that school is an uncomfortable place for them in some other way.<sup>27</sup> For parents with children exhibiting school avoidance behaviour, it is often very difficult to force the children into school.<sup>28</sup> Independent schools, attended largely by well-off families, do not have a truancy problem.<sup>29</sup>

### **The harmful effects of the UK's absenteeism policy**

It seems sadly ironic that the consequences for many of these families, already suffering from the effects of poverty and/or a school system that the child experiences as hostile, should be further burdened in the form of fines, or on occasion even the loss of a parent who is sent to jail. Punishing poverty-stricken or otherwise disadvantaged and struggling families for school absenteeism is as cruel as punishing a person on crutches for not running as fast as her peers and justifying the punishment on the basis of a strong correlation between running speed and longevity. Many teachers understand this and stand against strict positions on absenteeism. In 1993, an early attempt by the government to control absenteeism, which involved publishing absenteeism league tables, was boycotted by one in four school heads who felt that 'the truancy exercise is pointless'.<sup>30</sup> The inappropriateness of such legislation and its potential to result in unfair, harmful practices has been noted by the Welsh National Union of Teachers (NUT Cymru) Secretary, David Evans:<sup>31</sup>

No one doubts the seriousness of hard core truancy...This is clearly an issue that does need to be tackled, but simply fining parents is not the way to do that...We simply do not accept that punishment rather than support is the answer. What schools and parents need is properly resourced truancy services that make parents part of the solution. The culture of blame will only create even greater problems for those parents who are struggling already in many cases to find the money for food and heating. Truancy and poverty are linked. Financially punishing parents will, in all likelihood, hit the most vulnerable people and those families closest to the poverty line. This is a policy which will cause more harm than good and goes against the very principles of community support which drive Welsh society.

Up to now I have assumed that the Department for Education's questionable assumption of causality between absenteeism and poor attainment was the result of ignorance and a false epistemology. However, I cannot help but wonder if their position conveniently achieves goals unrelated to school achievement. One such goal might be the simplification of policing youths by keeping them in school. Perhaps it is not coincidental that there was a renewed vigour to fight truancy (the Government's preferred word, one which unlike absenteeism implies agency on behalf of the youth) after the August 2011 youth riots across England; for example, in October 2011 the government reduced the definition of 'persistent absence' used to hold schools to account from 20% to 15%.<sup>32</sup> Another goal might be to reduce lost earnings due to sickness-related absence at work, by training children to keep to their schedules even if

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<sup>26</sup> Brown *et al* 2011.

<sup>27</sup> Kearney and Albano 2000; Malcolm *et al* 2003.

<sup>28</sup> Brown 2012.

<sup>29</sup> Reid 2013.

<sup>30</sup> Abrams 1993.

<sup>31</sup> NUT Cymru 2012.

<sup>32</sup> Department for Education 2013.

they have a minor illness, suggested by the Government's expert advisor on behaviour.<sup>33</sup> In support of this suggestion, recent figures show that most of the improvement in absenteeism has been due to reductions in flu-related absenteeism.<sup>34</sup> Yet another goal might be to distract attention from the real causes of poor attainment, namely issues of social inequality. The ideological freedom given to policy-makers by the contradictions of Hume's two causalities can be seen at work here. If for some reason the Government preferred to ignore absenteeism (let us say they felt it saved them money to have some children refuse education) they could simply say that they did not think that the correlation was causal. If that seemed too unlikely, they could call on the fact/value distinction and claim that facts do not imply values; they could enlist some moral reason for not following the policy suggested by the correlation, such as that ultimately parents should to a large extent be trusted to decide when their children need time off school.

I am not necessarily suggesting the existence of a conspiracy designed to maintain the status quo, although I do think that protecting the status quo is a likely outcome of the current approach to social science. I am suggesting that the Government is displaying a phenomenon that we all know well, where we tend to choose the interpretative option that is most convenient. An everyday example is possibly illustrative. I am driving and notice the scent of burning. Is there a fire next to the road? Is my car over-heating? Instead of stopping to check which interpretation is true, which would be inconvenient, I decide to believe that there is a road-side fire (convenient) and therefore nothing to worry about. A few miles down the road, my engine burns out.

### **Transfactuality and retroduction**

Notice how my theory of the underlying causes of certain empirical facts (the scent of burning, basaltic rocks or poor school attainment) is a transfactual one. I have taken the empirical facts which include, but are not limited to, correlations — and used these facts to justify my theory of causal structures and mechanisms. The logic that I have used is neither deduction nor induction; it is called retroduction. It posits antecedent circumstances to explain the evidence. In the moon rocks example, geologists developed transfactual theories about the formation of rocks using what they knew (facts) about the Earth's rocks. They then used these theories to understand the formation of the moon rocks. What is ironic is that social scientists, who for so long have been considered the poor cousins of 'real' science because they could not use proper experimental techniques, appear more averse to transfactuality than the natural scientists who regularly make use of it. Instead social scientists prefer emaciated theories of cause and effect. In studying astronomy, and in studying social phenomenon, because neither can be carried out in experimental conditions, both must necessarily rely on transfactuality.

### **The optimism implied by our honesty, integrity and stoicism**

I believe that underlying the actions of a majority of policy implementers is the honest desire to be faithful to the implications of quality research and to stoically do what is necessary, even when it is hard work, to improve the social context. Head masters, social workers, teachers and parents are by and large trying to do the right thing. However, they are currently acting as Hume should have done if he was an honest man: they are walking out of the building using the second floor window rather than the ground floor door. Nevertheless, the

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<sup>33</sup> Taylor 2012.

<sup>34</sup> Department for Education 2013.

same desire to be high-quality scientists, civil servants and citizens should potentially motivate us to stop the problematic reification of constant conjunctions, and instead to rely on transfactuality, which is already present in mainstream science but for the most part is occluded.

## Conclusion

Hume's empiricism is currently hegemonic in mainstream science. In its two forms, specifically its forms as regularity determinism and the fact/value distinction, this empiricism: a) results in false and shallow theory; and b) provides the ground for ideologically-based decisions to be cloaked as neutral science. Instead, I introduce the idea of transfactuality and its associated emergence and interdisciplinarity as a better way of understanding causal mechanisms in social science. Using the example of how researchers have studied moon rocks, I suggest that transfactuality is a vital part of mainstream science, even if it is not usually mentioned in courses on scientific methods. I demonstrate that researchers would do better to admit that transfactuality is unavoidable, rather than to deny it; thus giving us leverage to challenge arguably harmful social policy, such as that introduced to reduce absenteeism. I further explain that this educational policy on school absenteeism is based on correlations which are assumed to be causal but whose causality is mistrusted even by the researchers who reported them. Instead of basing educational policy on reified facts, in this case the reified but questionable 'fact' that absenteeism 'causes' low attainment, I suggested that we base our policy on a transfactual, interdisciplinary theory that suggests that low attainment is caused by: poverty; social inequalities; and personal circumstances such as natural ability, family structure and psychology. Ironically, it is professionals' honesty, integrity and stoicism — and their belief in the righteousness of evidence-based policy — that leads them to implement socially damaging interventions even in the face of the obviousness of the wrong-headed nature of those interventions. This extreme overthrow of reason and common sense is an overthrow that even Hume himself did not achieve since he qualified his regularity determinism with the fact/value distinction, effectively ruling out action based on correlations. Taking Hume's empiricism more seriously than even he did is a significant barrier to our ability to organise for the future. However, optimistically, given the presence of professional honesty, integrity and stoicism, it seems entirely possible that we can achieve an improved understanding and use of science. We simply have to provide the circumstances for policy makers' and implementers' powerful professional motivation to be directed towards truth and complexity, rather than falsity and reductionism. This will greatly improve our ability to achieve human well-being.

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