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# The NESS Account of Natural Causation: A Response to Criticisms

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RICHARD W WRIGHT\*

## I. INTRODUCTION

The NESS (necessary element of a sufficient set) account of natural (scientific, ‘actual’, ‘factual’) causation is usually acknowledged to be a more satisfactory and comprehensive account than the traditional *sine qua non* (‘but for’) account.<sup>1</sup> However, objections have been raised to the claim that the NESS account fully captures the concept of natural causation (hereafter ‘causation’) and properly handles all types of situations. Various types of counter-examples have been proposed. More fundamentally, it is argued that the NESS account is viciously circular, since causal terminology often is used in its elaboration and it relies upon the concept of causal laws.<sup>2</sup>

Many of the objections raised against the NESS account assume that it is essentially the same as Herbert Hart’s and Tony Honoré’s ‘causally relevant factor’ account and John Mackie’s INUS account. In section II of this chapter I distinguish these three accounts, which differ in important ways that make the latter two accounts vulnerable to objections to which the NESS account is immune, and I offer an account of causal laws that I believe

\* I am grateful to my critics for raising issues that forced me to develop further my elaborations of the NESS account, to Horacio Spector for helpful discussions during the early stages of preparation of this chapter, and to David Cheifetz and Tony Dillof for helpful comments during the final stage.

<sup>1</sup> eg American Law Institute, *Restatement of the Law, Third, Torts: Liability for Physical and Emotional Harm* [Restatement Third] (St Paul, Minnesota, American Law Institute, 2010) s 26 comment c, s 27 comments a, f–i and reporters’ notes; A Beaver, *Rediscovering the Law of Negligence* (Oxford, Hart Publishing, 2009) 417–21, 426; DA Fischer, ‘Insufficient Causes’ (2006) 94 *University of Kentucky Law Review* 277, 281–84, 317; R Fumerton and K Kress, ‘Causation and the Law: Preemption, Lawful Sufficiency, and Causal Sufficiency’ (2001) 64:4 *Law and Contemporary Problems* 83, 83–84, 95–97; T Honoré, ‘Necessary and Sufficient Conditions in Tort Law’ in DG Owen (ed), *Philosophical Foundations of Tort Law* (Oxford, Oxford University Press, 1990) 363, 363–64, 366, 367, 374–77, 381–85; M Kelman, ‘The Necessary Myth of Objective Causation Judgments in Liberal Political Theory’ (1987) 63 *Chicago-Kent Law Review* 579, 601–03; W Lucy, *Philosophy of Private Law* (Oxford, Oxford University Press, 2007) 170–76; MS Moore, *Causation and Responsibility* (Oxford, Oxford University Press, 2009) 473–74, 486–90, 493; SR Perry, ‘The Impossibility of General Strict Liability’ (1988) 1 *Canadian Journal of Law and Jurisprudence* 147, 157; J Stapleton, ‘Choosing What We Mean by “Causation” in the Law’ (2008) 73 *Missouri Law Review* 433, 443–44, 471–72, 474; JJ Thomson, ‘Some Reflections on Hart and Honoré, Causation in the Law’ in M Kramer et al (eds), *The Legacy of HLA Hart: Legal, Political and Moral Philosophy* (Oxford, Oxford University Press, 2008) 143, 144, 148–50, 157, 163–64.

<sup>2</sup> Beaver (n 1) 422–25; Fischer (n 1); Fumerton and Kress (n 1) 84, 97–104; Kelman (n 1) 603–08; Moore (n 1) 477, 484, 494–95; Stapleton (n 1) 472–79; Thomson (n 1) 147–54.

rebutts the claim that the NESS account is viciously circular. In section III I argue that the NESS account handles properly the various types of situations that have been raised as alleged counter-examples to its comprehensive validity. In both parts, the most significant criticisms are addressed in the text, while other criticisms are discussed in the footnotes.

## II. DISTINGUISHING THE NESS ACCOUNT FROM HART AND HONORÉ'S AND MACKIE'S ACCOUNTS

The NESS account often is erroneously equated with Hart and Honoré's account of a 'causally relevant factor' and John Mackie's account of an INUS condition. This is understandable, since, although I have often noted the significant differences between the NESS account and the other two accounts, I drew on both of the other accounts in developing and elaborating the NESS account, credited Hart and Honoré with the initial elaboration of the weak sense of necessity that underlies each of the three accounts and distinguishes them from the traditional *sine qua non* account, and loosely used the NESS acronym to refer to Hart and Honoré's account as well as my own account.<sup>3</sup> However, the criticisms directed indiscriminately against all three accounts do not apply to the NESS account, owing to the significant differences between it and the other two accounts.

The weak sense of necessity that underlies all three accounts was initially elaborated in 1959 in Hart and Honoré's seminal treatise, *Causation in the Law*.<sup>4</sup> Contrary to the traditional insistence in law, and by many philosophers, that a cause be a condition that 'made a difference' by being strongly necessary for the occurrence of the consequence, in the sense that without it the consequence would not have occurred on the particular occasion, Hart and Honoré employed John Stuart Mill's scientific-method based account of causal laws and singular instances of causation<sup>5</sup> to explain that a 'causally relevant factor' need merely be 'necessary just in the sense that it is one of the set of conditions jointly sufficient for the production of the consequence: it is necessary because it is required to complete this set.'<sup>6</sup> Under this weak sense of necessity, which is also referred to as strong sufficiency, necessity is subordinated to sufficiency: a causally relevant factor need merely be necessary for the sufficiency of a set of conditions sufficient for the occurrence of the consequence, rather than being necessary for the consequence itself as in the *sine qua non* account.<sup>7</sup>

Hart and Honoré demonstrated the superiority of their weak-necessity account of a causally relevant factor to the *sine qua non* account in a variety of situations.<sup>8</sup> They also correctly emphasised that causation is an empirical rather than a merely analytical, logical or identity relation.<sup>9</sup> However, their account had some significant deficiencies, all of which are

<sup>3</sup> RW Wright, 'Causation, Responsibility, Risk, Probability, Naked Statistics, and Proof: Pruning the Bramble Bush by Clarifying the Concepts' (1988) 73 *Iowa Law Review* 1001, 1018–34.

<sup>4</sup> HLA Hart and AM Honoré, *Causation in the Law* (Oxford, Oxford University Press, 1959).

<sup>5</sup> HLA Hart and T Honoré, *Causation in the Law*, 2nd edn (Oxford, Oxford University Press, 1985) 13–22, 111–13; see JS Mill, *A System of Logic* bk III ch IV s 1, ch V ss 2–3, ch VIII ss 1–4, ch X ss 1–3; RW Wright, 'Causation in Tort Law' (1985) 73 *California Law Review* 1735, 1788–91.

<sup>6</sup> Hart and Honoré (n 5) 112.

<sup>7</sup> See Wright (n 3) 1020–21 for discussion of the different senses of necessity and sufficiency.

<sup>8</sup> Hart and Honoré (n 5) 122–28, 206–07, 235–53.

<sup>9</sup> *ibid* 114–15; see Fumerton and Kress (n 1) 90–93; Thomson (n 1) 148 fn 7. Also to be ruled out are mere mereological relations – the relation between some entity and its constituent parts. See J Collins, N Hall and LA Paul, 'Counterfactuals and Causation: History, Problems, and Prospects' [Collins, Hall and Paul, Introduction] in

remedied in the NESS account. They apparently required that a causally relevant factor be either strongly necessary or independently strongly sufficient (sufficient for the occurrence of the consequence disregarding competing or duplicative conditions, but combined with the other weakly necessary conditions).<sup>10</sup> This requirement results in erroneous denials of causal contribution in the frequently occurring situations in which numerous conditions combine to cause the consequence, but none of them individually were (or could be proven to be) strongly necessary or independently strongly sufficient.<sup>11</sup> Hart and Honoré also submerged and sometimes confused the critical distinction between duplicative and preemptive causation by constructing an overlapping typology of overdetermined causation cases,<sup>12</sup> often emphasised 'making a difference' rather than sufficiency and thus sometimes erroneously employed strong-necessity rather than weak-necessity analysis in overdetermined causation situations,<sup>13</sup> interpreted the analysis of necessity as a hypothetical counterfactual analysis rather than a real world factual analysis,<sup>14</sup> interpreted sufficiency in terms

J Collins, N Hall and LA Paul (eds), *Causation and Counterfactuals* (Cambridge, MIT Press, 1994) 1, 21–22, 44. Causation is an empirical relationship between concrete properties of distinct events or states of affairs. TL Beauchamp and A Rosenberg, *Hume and the Problem of Causation* (New York, Oxford University Press, 1981) 251–52, 255–56, 281–82; JL Mackie, *The Cement of the Universe: A Study of Causation* (Oxford, Clarendon Press, 1974) 32–33, 256–58, 260–63, 266–67; R Fumerton, 'Moore, Causation, Counterfactuals, and Responsibility' (2003) 40 *San Diego Law Review* 1273, 1278; LA Paul, 'Aspect Causation' in Collins, Hall and Paul (n 9) 205; Wright (n 3) 1033–34 and fn 171. After long arguing otherwise, Moore now acknowledges this. Moore (n 1) 361–65, 368 fn 61. Yet he persists in wanting to refer to whole events, rather than their causally relevant instantiated properties, as causes. *ibid* 366–68, 395–96. He apparently is driven to this position by his rejection of the 'harm within the risk' (HWR) limitation on attributable responsibility and his erroneous belief that the law's tortious-aspect-causation requirement is functionally equivalent to that limitation, which erroneous belief further leads him to claim that I support the HWR limitation. See *ibid* 104, 166–67 and fn 50. Contrary to Moore's claims, *ibid* 329–31, the law is not ambivalent between event-causation and aspect-causation, but rather clearly requires the latter, as I have shown while distinguishing, criticising and rejecting the HWR limitation. See Wright (n 5) 1759–74; RW Wright, 'The Grounds and Extent of Legal Responsibility' [Legal Responsibility] (2003) 40 *San Diego Law Review* 1425, 1479–1528.

<sup>10</sup> Hart and Honoré (n 5) 123–25, 206–07, 235–39, 245, 249. Hart and Honoré did not discuss situations involving conditions that were neither strongly necessary nor independently strongly sufficient. Writing separately, Honoré noted, without elaboration, that such conditions could be causes. AM Honoré, 'Causation and Remoteness of Damage' in A Tunc (ed), *International Encyclopedia of Comparative Law*, vol 11: *Torts* pt 1 (Tübingen, JCB Mohr, 1983) 7–107, 7–108, 7–115, 7–121. He apparently accepts the NESS account's extension of the weak-necessity analysis to encompass such situations. See text to n 147 below.

<sup>11</sup> See section III.E below.

<sup>12</sup> Hart and Honoré (n 5) xl, 122–25, 206–07, 235–53; see Honoré (n 10) 7–126 to 7–140; Wright (n 5) 1796–97.

<sup>13</sup> Hart and Honoré (n 5) 29, 34–37, 239–41, 246–48, 250–51; Honoré (n 1) 368–69, 371–73, 379–80; Honoré (n 10) 7–109 to 7–111(1), 7–126; see Thomson (n 1) 156–57; Wright (n 5) 1797–1801. As Hart and Honoré generally understood, 'making a difference' should be understood in the sense of weak necessity rather than strong necessity. See M Strevens, 'Mackie Remixed' in J Keim, M O'Rourke and D Shier (eds), *Causation and Explanation* (Cambridge, MIT Press, 2007) 93, 97–98, 111–12; RW Wright, 'Acts and Omissions as Positive and Negative Causes' in JW Neyers et al (eds), *Emerging Issues in Tort Law* (Oxford, Hart Publishing, 2007) 287, 294 fn 20.

<sup>14</sup> Hart and Honoré (n 5) lviii–lxi; Honoré (n 1) 370–72. But see Honoré (n 1) 376–79 (engaging in causal sufficiency analysis by matching actual concrete conditions against the abstract conditions in the antecedent of a causal law). For discussion of the many defects of the counterfactual-dependency analysis of causation, see Moore (n 1) 382–90, 392–425; Collins, Hall and Paul, Introduction (n 9) 2–12, 15–29; N Hall, 'Two Concepts of Causation' in Collins, Hall and Paul (n 9) 225, 225–26, 232–48; J Schaffer, 'Trumping Preemption' in Collins, Hall and Paul (n 9) 59, 67–71. Although I initially referred to the analysis of necessity in both the NESS account and the *sine qua non* account as a counterfactual analysis, see Wright (n 5) 1803–07, I have always insisted that the analysis is (or should be) a real-world 'covering law' matching of actual conditions against the required elements of the relevant causal generalisations rather than a counterfactual 'possible worlds' exploration of what might have occurred in the absence of the condition at issue. *ibid*; Wright (n 13) 296–97; Wright, Legal Responsibility (n 9) 1444–45 and fn 67; RW Wright, 'Once More Into the Bramble Bush: Duty, Causal Contribution, and the Extent of Legal Responsibility' [Once More] (2001) 54 *Vanderbilt Law Review* 1071, 1106–07; Wright (n 3) 1035–37, 1039–42; see n 119 and text to nn 118–19 below. The existence of these two very different methods of analysing necessity is noted by Moore, who however incorrectly describes both methods as 'counterfactual' and focuses on the second approach. Moore (n 1) 372–82, 390.

of abstract, incomplete causal generalisations rather than complete instantiation of the causal laws underlying the causal generalisations,<sup>15</sup> and denied that human decisions and actions are governed by causal laws.<sup>16</sup>

Nevertheless, Hart and Honoré's account of a causally relevant factor was a major advance in the analysis of causation in both law and philosophy. Unfortunately, however, their account was overshadowed and distorted by their primary emphasis on elaborating supposedly factual 'common sense' principles for treating only some causally relevant factors as causes,<sup>17</sup> so that, initially, it received minimal attention in the legal literature.<sup>18</sup>

Hart and Honoré's account had a significant impact on non-legal philosophers, a number of whom subsequently published analyses of causation similar to Hart and Honoré's account, although generally without citing Hart and Honoré. The best known analysis was published in 1965 by a fellow professor at Oxford, John Mackie, who employed an acronym, INUS (for 'insufficient but necessary part of an unnecessary but sufficient condition'), to facilitate reference to his analysis.<sup>19</sup> However, these philosophers only used the weak-necessity analysis to describe causal laws. For singular instances of causation they required that the condition at issue be necessary for the occurrence of the consequence in the particular circumstances, thereby converting their accounts into the *sine qua non* account.<sup>20</sup> Mackie went further: he denied that identification of singular instances of causation requires any (even implicit) reference to causal laws or generalisations.<sup>21</sup> Mackie's arguments on these two issues do not withstand analysis and are contradicted by other arguments that he himself makes.<sup>22</sup> Yet, due perhaps to the handy INUS acronym, philosophers have generally referred to Mackie's INUS account of weak necessity rather than Hart and Honoré's earlier account.<sup>23</sup>

In 1985, I substantially revised and extended Hart and Honoré's account of a causally relevant factor and created the NESS acronym to refer to this revised and extended account.<sup>24</sup> According to the NESS account as initially elaborated, a condition *c* was a cause

<sup>15</sup> Hart and Honoré (n 5) 15, 22, 32, 44–45, 111–12, 124–25, 207, 237; Honoré (n 10) 7–53.

<sup>16</sup> See section III.F below.

<sup>17</sup> See RW Wright, 'The Nightmare and the Noble Dream: Hart and Honoré on Causation and Responsibility' in M Kramer et al (eds), *The Legacy of H.L.A. Hart: Legal, Political and Moral Philosophy* (Oxford, Oxford University Press, 2008) 165. The introduction to *Causation in the Law* focuses entirely on this issue; it does not mention the distinction between natural causation and attributions of responsibility or their account of causally relevant factors. See Hart and Honoré (n 5) 1–7; *cf* *ibid* 8–12.

<sup>18</sup> See Wright (n 5) 1788 fn 227.

<sup>19</sup> JL Mackie, 'Causes and Conditions' in E Sosa and M Tooley (eds), *Causation* (Oxford, Oxford University Press, 1993) 33, 34–37, originally published in (1965) 2 *American Philosophical Quarterly* 245 and revised and reprinted as chapter three of Mackie (n 9). Honoré states that Mackie 'applied our idea' in developing his INUS account. Honoré (n 1) 365. However, unlike Hart and Honoré's account or the NESS account, Mackie literally requires that an INUS condition be insufficient by itself for the consequence and that the sufficient condition of which it is a part be unnecessary. Both restrictions are too strict.

<sup>20</sup> *eg* Mackie (n 9) 38–48, 62, 76–77, 126–27; see Wright (n 3) 1023 fn 113.

<sup>21</sup> Mackie (n 9) 40–58, 76–78, 120–22. Fumerton, Kress and Moore seem to agree with Mackie. See Fumerton and Kress (n 1) 97. Despite Moore's insistence that singular instances of causation must always be 'accompanied by' causal laws, Moore (n 1) 361–64, 472, 496–97, 506, and his declaration that the notion that one can directly observe singular causal relations is a 'hogchoker of a premise', *ibid* 363, he asserts that singular causal relations are basic and prior to causal laws, which are mere inductively derived generalisations from already identified (in some unexplained manner) true singular instances of causation. *ibid* 361, 472–73, 497–99, 506. In the end Moore seems to abandon even this apparently superfluous role for causal laws and instead to opt for being a 'reluctant primitivist'. See *ibid* xii, 505–12.

<sup>22</sup> See Hart and Honoré (n 5) xxxix–xlii; Wright (n 3) 1023–34; text to nn 42–64, 156–59 below.

<sup>23</sup> See Wright (n 3) 1023 fn 113.

<sup>24</sup> Wright (n 5) 1788–1803.

of a consequence  $e$  if and only if it was necessary for the sufficiency of a set of existing antecedent conditions that was sufficient for the occurrence of  $e$ .<sup>25</sup> The required sense of sufficiency, which (following a suggestion by Fumerton and Kress)<sup>26</sup> I call ‘causal sufficiency’ to distinguish it from mere lawful strong sufficiency, is the instantiation of all the conditions in the antecedent (‘if’ part) of a causal law, the consequent (‘then’ part) of which is instantiated by the consequence at issue.<sup>27</sup> A causal law is an empirically derived statement that describes a successional relation between a set of abstract conditions (properties or features of possible events and states of affairs in our real world) that constitute the antecedent and one or more specified conditions of a distinct<sup>28</sup> abstract event or state of affairs that constitute the consequent such that, regardless of the state of any other conditions, the instantiation of all the conditions in the antecedent entails the immediate instantiation of the consequent, which would not be entailed if less than all of the conditions in the antecedent were instantiated.

It is critically important when analysing singular instances of causation to distinguish causal relations from mere lawful relations. To do so one must include in the causal analysis the entire causal process up to the time of the occurrence of the consequence.<sup>29</sup> The definition of a causal law in the immediately preceding paragraph assures this by requiring that the instantiation of the consequent of the causal law occur immediately when all of the conditions in the antecedent of the causal law have been instantiated. A causal process consists of the instantiation of one or more simultaneously or successively operative causal laws. Another critical feature of causal laws – and the related concept of causal sufficiency as distinct from mere lawful sufficiency – is their successional or directional nature, according to which the instantiation of the conditions in the antecedent of the causal law causes the instantiation of the consequent, but not vice versa.<sup>30</sup> Our knowledge of the required conditions in the antecedent of a causal law – and thus of the direction of causation – is based on experience and empirical investigation, by ourselves or others. Scientists employ Mill’s Difference Method in carefully designed experiments to see if the non-instantiation of a supposed antecedent condition makes a difference in the occurrence of the consequence.<sup>31</sup> For example, we determine by observation or experimentation that eliminating a flagpole or changing its height eliminates or changes the length of the flagpole’s shadow, but not vice versa.<sup>32</sup> In the causal law that is thereby derived, the successional antecedent NESS conditions are grouped together in the ‘if’ part of the causal law and the consequent is stated separately in the ‘then’ part. The successional nature of causation is incorporated

<sup>25</sup> See text to n 40 below for my current definition of a concrete NESS condition. The definition in the text here is itself a clarification of my initial definition, which literally merely required that a NESS condition be a necessary member of a sufficient set and thus failed to expressly incorporate the requirement, which has always been stated in my elaborations of the NESS account, that a NESS condition be necessary for the sufficiency of a sufficient set. eg Wright (n 5) 1790; Wright (n 3) 1019, 1021, 1041. Richard Fumerton and Ken Kress drew my attention to the ambiguity in my initial definition. See Fumerton and Kress (n 1) 94; Wright, *Once More* (n 14) 1103 fn 112.

<sup>26</sup> Fumerton and Kress (n 1) 93, 101–02; see Wright, *Once More* (n 14) 1103 fn 113. Michael Strevens employs the term ‘causal sufficiency’ for a similar, if not identical, concept of sufficiency. See text to n 73 below.

<sup>27</sup> I have always insisted on this. eg Wright (n 5) 1789, 1795–98, 1803–04, 1808–09, 1823; Wright (n 3) 1031, 1033, 1041–42, 1045–46, 1049–53.

<sup>28</sup> See n 9 above.

<sup>29</sup> See Fumerton and Kress (n 1) 103–04; Hall (n 14) 238–40; Honoré (n 10) 7–53, 7–107, 7–110; Schaffer (n 14) 67–71; Strevens (n 13) 113–16; Thomson (n 1) 153–54, 164; text to n 73 below.

<sup>30</sup> Fumerton and Kress (n 1) 93; see sections III.B and III.C below.

<sup>31</sup> See Mill (n 5) bk III ch VII ss 2–4, ch VIII s 2.

<sup>32</sup> However, as Hart and Honoré note, one should be careful not to treat human manipulability as a requirement for being a cause. Hart and Honoré (n 5) 36.

in the concept of causal sufficiency, which is defined as the complete instantiation of all the conditions in the antecedent of the relevant causal law.<sup>33</sup>

While the NESS account's definition of causal sufficiency relies upon the concept of a causal law, the concept of a causal law is defined above without any use of causal language. There is no conceptual circularity here, vicious or otherwise. Even if some circularity should be found to exist in these definitions, it would not be 'vicious'. The NESS account provides a description of the structure of causal laws and their instantiation that is acknowledged, even by its critics, to be illuminating and very useful for proper identification of singular instances of causation.<sup>34</sup>

Our knowledge of causal laws generally is incomplete, and even when it is complete we rarely refer to completely specified causal laws, since such complete specification would be extremely burdensome and unnecessarily detailed and lengthy. We rather employ causal generalisations, which refer to only some of the antecedent conditions in the relevant causal laws and have only as much specificity as is possible and needed in the particular situation. For example, we usually refer to the causal generalisation that specifies that bringing a flame into contact with combustible material causes that material to burn, without referring to other necessary antecedent conditions such as the presence of oxygen or the absence of a soaking rain – unless the latter expected conditions did not exist in the particular situation or, conversely, existed but were not expected. Moreover, the generalisations that we employ usually refer elliptically to a large number of simultaneously or successively operative causal laws.<sup>35</sup>

However, when we make an assertion regarding a singular instance of causation, we are implicitly asserting that all the unstated as well as the stated conditions in the relevant causal generalisations and all the unknown as well as known conditions in the causal laws underlying the causal generalisations were instantiated on the particular occasion. Contrary to Hart and Honoré's account,<sup>36</sup> the NESS account insists that singular instances of causation always consist of the complete instantiation on a particular occasion of one or more causal laws, and that identification of a singular instance of causation always implies that such complete instantiation has occurred.<sup>37</sup> The implication may be based on direct particularistic evidence of the existence of one or more of the required conditions, or, as is always true for the unknown conditions in the causal laws and generally true for many (sometimes all) of the known conditions, is inferred from particularistic evidence of the network of causal relationships that encompasses the particular occasion.<sup>38</sup>

<sup>33</sup> See text to n 27 above. Interpreted in the usual manner, causal succession precludes temporally backward causation, through which events today change events in the past. However, the definition of causal succession in the text does not preclude such backward causation, which would occur if the present instantiation of the antecedent results in the immediately following instantiation of the consequent (paradoxically) in the past.

<sup>34</sup> eg Beever (n 1) 426; Fischer (n 1) 277, 281–84, 302, 317; Fumerton and Kress (n 1) 83–84, 95–97, 102–04; Moore (n 1) 361–62, 368 and fns 59 and 61, 473–74, 486–90, 493; Stapleton (n 1) 443–44, 471–72, 474; Thomson (n 1) 144, 148–50, 163–64.

<sup>35</sup> Hart and Honoré (n 5) xxxvii, 11–13, 31–32, 45–49; Honoré (n 10) 7–53; Mackie (n 9) 35–38, 66–76; Mill (n 5) bk III ch IV s 1, ch V ss 2–3; Moore (n 1) 477–78, 485; Strevens (n 13) 111–12; Wright (n 5) 1823–24; Wright (n 3) 1031–34, 1045–46. Hart and Honoré erroneously claim that Mill insisted that all of the conditions in the antecedent of the relevant causal law must be known before selecting only one or a few for explicit reference in a singular causal statement. Hart and Honoré (n 5) 15, 21, 22, 31, 44–47; Honoré (n 10) 7–53.

<sup>36</sup> See text to n 15 above. But see Honoré (n 1) 367, 376, 385 (apparently accepting the NESS account's conception of causal generalisations and singular instances of causation).

<sup>37</sup> See text to nn 25–27 above.

<sup>38</sup> Wright (n 3) 1045–46, 1049–52.

Even when the inference of an applicable causal generalisation (and the underlying causal laws) is based on a single observation of a singular instance of causation, the inference of causation in the singular instance comes after and depends upon the inference of the applicable causal generalisation. In such instances the order is (1) observation of the occurrence, (2) inference of the causal generalisation based on the observation, and (3) assertion of causation through enunciation of the singular causal statement, which implicitly invokes the causal generalisation.<sup>39</sup>

My initial elaborations of the NESS account were overly demanding. I incorporated the weak-necessity requirement in the definition of singular instances of causation. As I have previously stated, this is too restrictive. The weak-necessity requirement is sufficiently incorporated in a properly formulated causal law, which contains in its antecedent only those abstract conditions the instantiation of which is necessary for the sufficiency of the set of conditions that is sufficient for the immediate instantiation of its consequent. When analysing singular instances of causation, an actual condition *c* was a cause of an actual condition *e* if and only if *c* was a part of (rather than being necessary for) the instantiation of one of the abstract conditions in the completely instantiated antecedent of a causal law, the consequent of which was instantiated by *e* immediately after the complete instantiation of its antecedent, or (as is more often the case) if *c* is connected to *e* through a sequence of such instantiations of causal laws.<sup>40</sup> This formulation of the requirement for a NESS condition is more straightforward and simpler to apply than my initial formulation, which requires ‘at least so much’ descriptions of actual conditions in some situations in order to (validly) treat other conditions as NESS conditions.<sup>41</sup> However, care must be taken to make sure that the antecedents of the relevant causal laws include only abstract NESS conditions in the strict sense – that is, those abstract conditions the instantiation of which is necessary for the sufficiency of the set of conditions that is sufficient for the instantiation of the consequent.

The *sine qua non* account’s strong-necessity analysis, properly applied,<sup>42</sup> is a corollary of the NESS analysis that gives the correct answer when there was only one set of conditions that was actually or potentially sufficient for the consequence on the particular occasion.<sup>43</sup> Contrary to what many assume,<sup>44</sup> the *sine qua non* analysis relies on an embedded analysis of (lawful rather than causal) sufficiency. To determine if some condition was strongly necessary for the occurrence of some consequence that actually occurred, one must ‘rope off’ the condition at issue and then, using the relevant causal generalisations, determine whether the remaining existing conditions were lawfully sufficient for the occurrence of the consequence – that is, whether the relevant causal laws would have been fully instantiated

<sup>39</sup> *ibid* 1031–34; see Mill (n 5) bk III ch III.

<sup>40</sup> Wright (n 13) 297–98; Wright (n 3) 1045; see text to nn 27–29 above. Allan Beever fails to note my recent confinement of the weak-necessity requirement to the abstract conditions in causal laws. He rejects any necessity restriction in causal analysis and instead merely requires that a condition be a member of a sufficient set. This ‘weak sufficiency’ analysis opens the door to treating every condition as a cause. See Beever (n 1) 425–26; Wright (n 3) 1020–21.

<sup>41</sup> Wright (n 5) 1793–94; Wright, Legal Responsibility (n 9) 1444–45; Wright, Once More (n 14) 1106–07; Wright (n 3) 1035–37; see text to nn 117–20 below.

<sup>42</sup> See n 14 above.

<sup>43</sup> Hart and Honoré (n 5) 112–13; Wright (n 3) 1021.

<sup>44</sup> eg DW Robertson, ‘Causation in the *Restatement Third of Torts: Three Arguable Mistakes*’ (2009) 44 *Wake Forest Law Review* 1007, 1010 (‘[W]hen we make causation-attribution decisions, necessity *vel non* is the heart of the inquiry. . . . In torts cases, the cause-in-fact inquiry is always an attribution question, never a predictive one, so sufficiency issues are not in play.’).

in the absence of the condition at issue. If they would have been, the condition at issue was not strongly necessary for the occurrence of the consequence.<sup>45</sup>

In overdetermined causation situations,<sup>46</sup> in which there were two or more (usually overlapping) sets of conditions that were each actually or potentially sufficient – for example, two fires each sufficient to destroy a house if the fire reaches the house while it is still standing, which merge and destroy the house (*duplicative causation*), or one of which reaches the house and destroys it before the other arrives (*pre-emptive causation*) – the NESS analysis reaches the proper conclusions regarding causation, while the *sine qua non* ('but for', 'made a difference') analysis as usually described and applied does not.<sup>47</sup>

The *sine qua non* analysis is able to reach the proper conclusion in many overdetermined causation situations if the consequence is qualified by the time at which it occurred,<sup>48</sup> and in a few more such situations if it is further qualified by the location at which it occurred.<sup>49</sup> However, employing such qualifications will greatly expand the proliferation of causes, especially if trivial differences in the time or location of a specific event – for example, due to gravitational forces exerted by nearby objects – are taken into account, rather than differences in the time or location of distinct events.<sup>50</sup> More significantly, in many situations it will be impossible to determine whether the condition at issue had any effect on the timing or location of the consequence, and a condition can be a cause even if it had no effect on the timing or location, or not be a cause even though (if not pre-empted) it would have caused the consequence at the same time and location.<sup>51</sup> The NESS analysis will properly resolve the causal issue in such situations; the *sine qua non* analysis will not.<sup>52</sup>

Some, including Hart and Honoré, Mackie, Michael Moore, Jane Stapleton and Robert Stevens, have stated that the *sine qua non* analysis can be further sharpened to reach the proper conclusion in overdetermined causation situations by specifying minute details of the consequence or qualifying it by the manner of its occurrence, 'as and how it came

<sup>45</sup> Wright (n 13) 296–97; see D Lewis, 'Void and Object' in Collins, Hall and Paul (n 9) 277, 279, 288–89; n 119 and text to nn 118–19 below.

<sup>46</sup> Contrary to the usual practice, Stapleton and Michael Stevens apply the term 'overdetermination' only to duplicative causation situations. Stapleton (n 1) 442 fn 19; Stevens (n 13) 104–05.

<sup>47</sup> Wright (n 5) 1775–76, 1791–98; Wright (n 3) 1018–28.

<sup>48</sup> Wright, *Once More* (n 14) 1112–14; Wright (n 13) 292 fn 14. Stapleton ignores these sources and my unsuccessful attempts to have the American Law Institute add a time-of-occurrence qualifier to the *sine qua non* test in s. 26 of the Restatement Third of Torts when she implies that I do not recognise that the *sine qua non* account can be modified in this manner to resolve the causal issue in many cases. See Stapleton (n 1) 452 and fn 42; American Law Institute, *79th Annual Meeting, Proceedings 2002* (Philadelphia, American Law Institute, 2003) 273–76; American Law Institute, *82nd Annual Meeting, Proceedings 2005* (Philadelphia, American Law Institute, 2006) 81–84. The major defects in the Restatement Third's treatment of 'factual causation' are discussed in n 125 below.

<sup>49</sup> F Stella, 'The Vitality of the Covering Law Model: Considerations on Wright and Mackie' [http://works.bepress.com/richard\\_wright/34/](http://works.bepress.com/richard_wright/34/) at 34–37.

<sup>50</sup> Collins, Hall and Paul, Introduction (n 9) 46; Hall (n 14) 237, 239; Moore (n 1) 477–78; see text to nn 53–56 below.

<sup>51</sup> Collins, Hall and Paul, Introduction (n 9) 23–24; Hall (n 14) 235–38; Schaffer (n 14) 70–71; Wright, *Once More* (n 14) 1112–14.

<sup>52</sup> Wright, *Once More* (n 14) 1112–14; see text to nn 83–88 and 96 below; cf Stapleton (n 1) 452–53 and fn 45 (employing the NESS account's causal sufficiency analysis rather than her 'duplicate necessity' analysis of 'involvement', which is described in n 125 below, to avoid treating a pre-empted condition as a cause). Federico Stella acknowledged the need to turn to the NESS account to handle these types of situations. Stella (n 49) 38. Yet he otherwise preferred the time-and-location-qualified *sine qua non* account, in part because he erroneously assumed that the NESS analysis as applied in the law is not framed by a focus on the legally relevant conditions, *ibid* 23, 39, but primarily (I believe) because he was concerned that 'in Italy to abandon [the *sine qua non* test] would lead to real disasters. Our judges . . . are very far from having a sound culture of proofs'. Federico Stella, email to Richard Wright, 25 January 2005.

about.<sup>53</sup> Both approaches are defective and extremely promiscuous.<sup>54</sup> The first approach will merely establish causation of some irrelevant detail of the consequence, rather than the consequence itself.<sup>55</sup> This objection applies as well to minute differences in the time or location of a specific event.<sup>56</sup> The second approach is viciously circular,<sup>57</sup> as Honoré and Moore now acknowledge.<sup>58</sup> Although Honoré notes that the law requires that a plaintiff identify the specific event for which she seeks redress, including the time, place and persons involved, he now rejects, as part of the causal analysis, qualifying the consequence by time, location or manner of occurrence.<sup>59</sup> Instead, he relies upon the NESS account's causal sufficiency analysis.<sup>60</sup> It therefore is puzzling that he states, without elaboration, that the *sine qua non* account will 'point to the same causal conclusion' as the NESS account when 'the [competing] causal processes are different' or 'one culminates in harm before the other'.<sup>61</sup>

Even initially, although stating that '[s]uch solutions are perfectly sound logically and legally', Hart and Honoré correctly noted that the second approach requires 'first deploying the more fundamental notion of sufficient conditions and so identifying the causal process which culminated in the harm'.<sup>62</sup> Similarly, Mackie notes that this approach relies upon determining which of the competing causal stories was completed in the particular situation.<sup>63</sup> Although Mackie does not acknowledge it, this is a causal sufficiency analysis rather than a strong necessity analysis. When even detailing the manner of occurrence will not distinguish the competing conditions using the *sine qua non* analysis, Mackie paradoxically asserts that none of the conditions individually were causes but all of them in the aggregate were.<sup>64</sup>

<sup>53</sup> A Becht and F Miller, *The Test of Factual Causation in Negligence and Strict Liability Cases* (St. Louis, Washington University Press, 1961) 15–19; D Coady, 'Preemptive Preemption' in Collins, Hall and Paul (n 9) 325, 327–33; Hart and Honoré (n 4) 118; Hart and Honoré (n 5) xli–xlii; Honoré (n 10) 7–111(2), 7–126; Mackie (n 9) 45–46; NJ McBride and R Bagshaw, *Tort Law*, 3rd edn (Harlow, Pearson Education Ltd, 2008) 535 fn 16; M Moore, 'Thomson's Preliminaries About Causation and Rights' (1987) 63 *Chicago-Kent Law Review* 497, 510–11; R Stevens, *Torts and Rights* (Oxford, Oxford University Press, 2007) 131, 133–34 and n 12, 135; Stapleton (n 1) 442 fn 19 ('death by two bullets'), 452 ('death by electrocution', 'death by explosion'). For hair-splitting semantic variations on this approach, see D Lewis, 'Causation as Influence' in Collins, Hall and Paul (n 9) 75, 85–90.

<sup>54</sup> Collins, Hall and Paul, Introduction (n 9) 46; Hall (n 14) 237–38, 239; Strevens (n 13) 96–97, 98–99, 111–12.

<sup>55</sup> Fumerton and Kress (n 1) 96–97; Wright (n 5) 1778–80.

<sup>56</sup> See text to n 50 above.

<sup>57</sup> Wright (n 5) 1777–78; Wright (n 3) 1025.

<sup>58</sup> Honoré (n 1) 378–79; Moore (n 1) 87 fn 16.

<sup>59</sup> Honoré (n 1) 378–79; see *ibid* 368.

<sup>60</sup> See *ibid* 377–79.

<sup>61</sup> *ibid* 374.

<sup>62</sup> Hart and Honoré (n 4) 118; see *ibid* 119; cf Hart and Honoré (n 5) xli–xlii, 124–25 (no longer asserting that this approach is 'sound logically and legally'). Although apparently not recognising what he is doing, Robert Stevens, in his attempt to defend the 'but for' test as the sole test of causation, employs causal sufficiency analysis rather than 'but for' analysis to reach the proper conclusion in several much-discussed overdetermined causation situations. He also resurrects the discredited privity of contract limitation on tort liability in order to explain the mechanic's lack of liability in the unused defective brakes case. See Stevens (n 53) 135–37; text to nn 83–94, 116–23 and 179–95 below.

<sup>63</sup> Mackie (n 9) 45–46.

<sup>64</sup> *ibid* 47, criticised in Moore (n 1) 354–56; Wright (n 3) 1026–27. Stevens claims to reject Mackie's aggregative move, not because it is illogical but rather because the law focuses on individual rather than aggregative responsibility. Stevens (n 53) 131. However, he implicitly employs it when assessing 'substitutive' and consequential damages for infringement of a right. For example, if a plaintiff's dog was killed by two stab wounds inflicted by different defendants, each of which would have been sufficient by itself to cause the death of the dog, Stevens asserts that the two defendants are each liable for 'the value of the dog' as 'substitutive' damages for their respective infringements of the plaintiff's right to the dog, and also for any consequential damages that are a 'but for' result of the dog's death, but that double recovery is not permitted since 'he only had one right to the dog'. *ibid* 134. Yet the 'but for' test can only establish each defendant's causation of a distinct stab wound, not the death of the dog,

The courts and the secondary literature generally do not qualify the consequence by specifying its non-salient details or the time, location or manner of its occurrence when describing or applying the *sine qua non* analysis.<sup>65</sup> Instead, in overdetermined causation situations they either reach incorrect conclusions on natural causation by using an unqualified *sine qua non* analysis<sup>66</sup> or employ question-begging, conclusory phrases – for example, ‘substantial factor’, ‘material contribution’ or ‘common sense causation’<sup>67</sup> – that confusingly merge the scientific issue of causal contribution with the normative issue of the appropriate extent of legal responsibility for the consequences of one’s (legally relevant) conduct while failing to provide any test or guidance for resolving either issue.<sup>68</sup>

Philosophers have attempted to defend the *sine qua non* account and the usual employment of counterfactual analysis in that account by shifting the focus of the analysis from the occurrence of the consequence at issue to the occurrence of each step in the competing causal sequences. This attempt abandons (without acknowledgement) strong necessity in favour of a deficient version of weak necessity. Moreover, it works only in ‘early pre-emption’ situations, in which the pre-emption of the pre-empted causal sequence occurs before the completion of the completed causal sequence. It does not work in ‘late pre-emption’ situations, in which the pre-emption of the pre-empted causal sequence occurs at the same time as (or after) the completion of the completed causal sequence, nor in any duplicative causation situation.<sup>69</sup> In the duplicative causation situations, some *sine qua non* advocates hold fast. They assert that neither of the duplicative conditions was a cause and that the alleged consequence is either an uncaused miracle or was caused by the conjunction of the duplicative conditions although neither by itself was a cause.<sup>70</sup>

and thus it cannot support holding either defendant liable for ‘substitutive’ damages for the full ‘value of the dog’ or for consequential damages caused by the dog’s death. Rather, under the individually applied ‘but for’ test that Stevens claims to be applying, each defendant can only be held liable for the ‘substitutive’ value of the rights infringement that is constituted by his or her stabbing of the dog, however that might be valued, and any consequential damages (of which there likely will be none) that are a ‘but for’ result of his or her distinct rights infringement. Moreover, although there is ‘only one right to the dog’, it is a right that each defendant has separately and distinctly infringed, and thus, under Stevens’ odd damages theory, each defendant should be fully but separately, rather than concurrently, liable for ‘substitutive’ damages for his or her distinct rights infringement, regardless of any resulting ‘double recovery’.

<sup>65</sup> See eg, Restatement Third (n 1) § 26; *Restatement (Second) of Torts* § 432(1) (1965); Hart and Honoré (n 5) xlii; Honoré (n 1) 378–79; n 48 above. Stapleton, rather than I, ‘falls into manifest error’ when she asserts otherwise. See Stapleton (n 1) 452 and fn 42.

<sup>66</sup> See Wright, Legal Responsibility (n 9) 1438–40; RW Wright, ‘Liability for Possible Wrongs: Causation, Statistical Probability, and the Burden of Proof’ (2008) 31 *Loyola Los Angeles Law Review* 1295, 1321–24.

<sup>67</sup> eg *March v E & MH Stramare Pty Ltd* (1991) 99 ALR 423 (High Court of Australia) (‘material contribution’ and ‘common sense’); *Athey v Leonati* (1996) 3 SCR 458 (Supreme Court of Canada) (‘materially contributed’); *Sew Hoy & Sons Ltd v Coopers & Lybrand* (1996) 1 NZLR 392 (New Zealand Court of Appeal) (‘material contribution’); *Fairchild v Glenhaven Funeral Services Ltd* [2002] UKHL 22, [2003] 1 AC 32 (‘material contribution’); *Kingston v Chicago & Northwestern Ry Co* (1927) 211 NW 913 (Supreme Court of Wisconsin) (‘substantial factor’); *Mitchell v Gonzales* (1991) 819 P 2d 872 (Supreme Court of California) (‘substantial factor’).

<sup>68</sup> Wright (n 5) 1742–50, 1781–88; Wright, Once More (n 14) 1073–80; Wright (n 3) 1012–14.

<sup>69</sup> See J Collins, ‘Preemptive Preemption’ in Collins, Hall and Paul (n 9) 107, 109–10; Collins, Hall and Paul, Introduction (n 9) 18, 22–24, 32–33; Schaffer (n 14) 67–70. Philosophers tend to focus on overdetermined causation situations involving pre-emptive rather than duplicative causation. eg Collins, Hall and Paul, Introduction (n 9); Hall (n 14); Schaffer (n 14); Lewis (n 53) 80–82; Thomson (n 1) 144, 150–51, 152–59.

<sup>70</sup> See Collins, Hall and Paul, Introduction (n 9) 32–33; Lewis (n 53) 80; Mackie (n 9) 47. David Coady adopts the latter position for pre-empted conditions as well as duplicative causes. Coady (n 53) 326–28.

### III. ALLEGED DEFICIENCIES OF THE NESS ACCOUNT

#### A. Spurious Weak Necessity

A common counter-example to the NESS account is the alleged conversion of a causally irrelevant condition  $c$  into a NESS condition by replacing a causally relevant condition  $b$  with two conditions, one of which is  $c$  and the other of which is a disjunction of  $b$  with the negation of  $c$ .<sup>71</sup> For example, if D's cutting off C's head was a necessary condition for C's death (or for the sufficiency of a set S of conditions sufficient for C's death), D's beheading C is replaced with the following two conditions:

1. Napoleon married Josephine.
2. Either Napoleon did not marry Josephine or D beheaded C.

Given the disjunction in condition 2, the set S is not sufficient for C's death unless we also include condition 1, so, apparently, Napoleon's marrying of Josephine is (erroneously) treated as a cause of C's death under the NESS account.

To counter this logical manoeuvre, Fumerton and Kress propose excluding from the set S of sufficient conditions any condition (such as condition 2 above) that contains a truth-functional constituent part (such as 'D beheaded C') that by itself is lawfully sufficient for the consequence.<sup>72</sup> Without condition 2, S is no longer a sufficient set, so condition 1 is not a NESS condition. To be generally effective, this analytic counter needs to be broadened to exclude as a constituent part of any disjunctive condition in S a condition that is sufficient when conjoined with all the other conditions in S other than the condition with which it is disjoined. However, such appended analytic restrictions not only seem ad hoc, they also are unnecessary given restrictions that are already embedded in the NESS account.

The requirement that a NESS condition be an actually existing condition rules out as a constituent part of any NESS condition the negation of any actually existing condition. Napoleon's marrying Josephine can be tentatively included in S as condition 1 only if it was an actually existing condition, but if it was then Napoleon's not marrying Josephine in condition 2 cannot be true, so condition 2 collapses down to the actual condition of D's beheading C, thereby making condition 1 not necessary for the sufficiency of S.

The logical manoeuvre that creates the spurious weak necessity is similarly precluded by the NESS account's requirement that each condition in S be part of the instantiation of a condition in a fully instantiated causal law. As Michael Strevens states in his revision of Mackie's INUS account in a way that makes it similar to the NESS account,

it is not enough that a set of conditions be sufficient for the occurrence of  $e$ ; it must be *causally sufficient* for  $e$ . . . Causal sufficiency ought to be defined, then, so that a set of conditions is causally sufficient for an event  $e$  only if the conditions represent a causal process that produces  $e$ . A set of conditions entailing  $e$  represents a causal process producing  $e$ , I propose, just in case each step in the entailment corresponds to a strand in the relevant causal web. . . .

[T]he step from the [statement of the causally irrelevant condition] and the disjunction [of the causally relevant condition and the negation of the causally irrelevant condition] to the [consequent] . . . is not a causal entailment, as it does not correspond to a causal process recognized by

<sup>71</sup> eg Thomson (n 1) 151; cf Lewis (n 53) 77.

<sup>72</sup> Fumerton and Kress (n 1) 95; Moore (n 1) 487–88.

the laws of physics. Indeed, it is hard to imagine a physics in which something in the world captured by the description  $\neg r$  [or]  $c$  could be part of any story about causal influence. . . . [W]hen what we regard as an intuitively irrelevant factor  $r$  is made essential to the entailment of an event  $e$ , it is always by way of disjunction or other logical construction that links  $r$  and  $e$  truth-functionally but not causally.

The approach to causal claims taken by my revision of Mackie's account puts a considerable burden on the physical laws; they must determine what primitive causal connections there are in the world, hence determine the structure of the causal web. I think that they are quite capable of bearing that load, and that we do indeed look to the laws as the final arbiters on any question of causal connection.<sup>73</sup>

This third counter to the logical manoeuvre that creates spurious weak necessity has been criticised as being circular, since it assumes the prior specification of a 'relevant causal web', the structure of which is determined by reference to the 'physical laws'.<sup>74</sup> However, the NESS account does not refer circularly to causally relevant conditions or causal laws. It specifies the method for identifying causally relevant conditions – they must be instantiations of abstract conditions listed in the antecedent of an empirically derived causal law – and its definition of a 'causal law' does not employ causal terminology.<sup>75</sup>

## B. Causal Directionality (No 'Backtracking')

When the sun is at a 45 degree angle to an upright flagpole and the shadow of the flagpole on the ground is 5 feet long, the laws of geometry and nature entail that the flagpole is 5 feet tall. However, as Fumerton and Kress state, 'it would surely be mistaken to claim that the shadow causes the flagpole to be [5] feet tall. If anything, the direction of causation is from the flagpole's height to the length of the shadow'.<sup>76</sup> Although Fumerton and Kress and others assume otherwise, this conclusion is correctly reached under the NESS account, which insists that singular instances of causation always involve the complete instantiation of an empirically derived causal law and that causal laws state a direction of causation, whereby the complete instantiation of the conditions in the antecedent of the causal law cause the instantiation of the consequent of the causal law, not vice versa.<sup>77</sup> Fumerton and Kress and others claim that the reference to causal laws and their inherent directionality is viciously circular.<sup>78</sup> However, as I have discussed above, this is not true.<sup>79</sup>

<sup>73</sup> Strevens (n 13) 113–14; see Collins, Hall and Paul, Introduction (n 9) 22 ('we should say that the disjunctive event is not an event at all, hence not apt to cause (or be caused)'); Moore (n 1) 355–56 (same).

<sup>74</sup> Thomson (n 1) 152–53.

<sup>75</sup> See text to nn 25–29 above.

<sup>76</sup> Fumerton and Kress (n 1) 102. Fumerton, Kress and Moore have the geometry wrong; they state that the flagpole must be 10 feet tall. *ibid* 93, 101–02; Moore (n 1) 476–77, 483.

<sup>77</sup> See text to nn 25–33 above.

<sup>78</sup> See n 2 above; *cf* Lewis (n 53) 77. Moore acknowledges that the directionality of causal laws is inherent in our concept of causation and can be used to reject the criticisms of the NESS account discussed in this section and the next section. However, he claims that referring to this directionality or to causal laws *per se* to elucidate the meaning of causation is viciously circular. He thus commends Mackie for treating this directionality, which Mackie calls 'causal priority', as an addition to, rather than as an essential constitutive element of, the sense of sufficiency employed in causal analysis. Moore (n 1) 482–85. Mackie acknowledged the use of the more discriminating sense of causal sufficiency in common discourse, but he thought it better for clarity's sake to reserve 'sufficiency' for mere lawful sufficiency. Mackie (n 9) 51–53. See *ibid* 190–92 for Mackie's analysis of causal priority.

<sup>79</sup> See text to nn 25–34 above.

### C. Epiphenomena (Collateral Effects of a Common Cause)

When a condition is a common cause of two different causal sequences, employing mere lawful strong sufficiency rather than causal sufficiency can result in erroneously treating conditions in one sequence as causes of the conditions in the other sequence, and vice versa.<sup>80</sup> A frequently mentioned example is Mackie's 'hooters' hypothetical, in which the horns ('hooters') at a Manchester factory and a London factory each sound at five o'clock every workday afternoon, signalling the stoppage of work at their respective locations. A few moments later, workers begin to exit from each factory. The sounding of the horn at the Manchester factory is lawfully strongly sufficient for its being five o'clock, and its being five o'clock is lawfully strongly sufficient for the sounding of the horn and the exodus moments later of workers at the London factory. Thus, the sounding of the horn at the Manchester factory is lawfully strongly sufficient for the sounding of the horn and exodus of workers moments later at the London factory.<sup>81</sup> But it is not a cause of these events at the London factory, as the NESS account correctly concludes, because it is not causally sufficient. Neither horn's sounding, nor even its existence, is part of the instantiation of the antecedent of any causal generalisation for which the consequent is the state of its being five o'clock. As we have empirically determined, the direction of causation runs the other way.<sup>82</sup>

### D. Pre-emptive Causation

The NESS account has been criticised for allegedly being unable to handle properly some types of pre-emptive causation situations. Once again, the criticisms erroneously assume that the NESS account merely requires lawful sufficiency, rather than causal sufficiency.<sup>83</sup> Consider some common examples:

1. C is a traveller in the desert, whose only source of water is a keg full of water. A adds a fatal dose of undetectable poison to the water in the keg, for which there is no antidote. C remains unaware of the poison in the water. Subsequently, before C drinks any of the poisoned water, B dumps the poisoned water out of the keg. When C attempts to drink water from the keg, she discovers that it is empty. C dies due to dehydration.
2. C drinks a fatal dose of poison for which there is no antidote but which takes several hours to produce death. While C is still alive, D shoots C in the head. C dies a few minutes later from the bullet wound, well before the time at which the death by poisoning would otherwise have occurred.
3. A ship is traveling down a river to deliver goods to Metropolis by a specific date. The ship is unable to arrive by that date, since its crew must and does stop when it reaches bridge A, which had collapsed into and blocked the river. The ship would not have been able to reach Metropolis on time even if bridge A had not collapsed, due to another collapsed bridge, bridge B, of which the ship's crew was unaware, located on the river between bridge A and Metropolis.

<sup>80</sup> Collins, Hall and Paul, Introduction (n 9) 17–18; Fumerton and Kress (n 1) 93, 101; Lewis (n 53) 77; Mackie (n 9) 33–34.

<sup>81</sup> Mackie (n 9) 83–86; Moore (n 1) 481–82.

<sup>82</sup> Strevens (n 13) 108–09; Wright (n 5) 1808–09.

<sup>83</sup> Fumerton and Kress (n 1) 100–02; Moore (n 1) 474; Thomson (n 1) 148–51.

If we merely require lawful sufficiency and do not qualify the consequence by the time of its occurrence – or, in examples 1 and 3, perhaps even if we do<sup>84</sup> – we would incorrectly treat the poison as well as the emptying of the keg in example 1, the poison as well as the shooting in example 2, and the collapse of bridge B as well as the collapse of bridge A in example 3 as duplicative causes of the relevant consequence (respectively, death, death, and failure to reach Metropolis on time). In each example, either condition guarantees the occurrence of the (abstractly described) consequence and thus is lawfully sufficient for its occurrence.<sup>85</sup> On the other hand, if we require strong necessity – that the condition ‘made a difference’ as a ‘but for’ cause – we would be forced to conclude that neither condition was a cause.

In the NESS account, we require *causal sufficiency* rather than strong necessity or mere lawful strong sufficiency. For causal sufficiency, the condition at issue must be part of the instantiation of a fully instantiated causal law that is part of a sequence of such fully instantiated causal laws that link the condition at issue with the consequence.<sup>86</sup> The instantiated causal laws that constitute the sequence are usually referred to incompletely and elliptically in the form of a causal generalisation.<sup>87</sup>

In example 1, the causal generalisation for death by poisoning includes the victim’s drinking the poison, a condition that was not instantiated since the keg was emptied before C was able to drink from it. On the other hand, the causal generalisation and the underlying causal laws for death by dehydration, which include as a necessary condition lack of water (and the physical bodily processes that occur as a result of the lack of water), were fully instantiated. Thus, B’s emptying of the keg, but not A’s poisoning of its contents, caused C’s death, even though C may have lived longer due to the emptying of the keg.<sup>88</sup>

Jane Stapleton states that there is substantial disagreement about this conclusion.<sup>89</sup> Hart and Honoré initially rejected it, but only because they erroneously equated causing death with shortening life.<sup>90</sup> Honoré eventually focused on the details of the competing causal processes and applied a causal sufficiency analysis to reach the correct conclusion:

[I]f we know enough about the stages by which the events came about we can generally tell, even in cases of over-determination, which causal process ran its course and which was frustrated. So in the case of the desert traveler . . . it now seems to me that B causes C’s death. . . . B’s conduct introduces a condition, lack of water, that in the circumstances . . . is sufficient to bring about and does bring about C’s death from dehydration.<sup>91</sup>

Stapleton initially claimed that A, instead of or in addition to B, can be treated as a cause of C’s death, or that one can plausibly argue that neither was a cause of C’s death – the

<sup>84</sup> See text to nn 48–56 above.

<sup>85</sup> See Fumerton and Kress (n 1) 100–02; Collins, Hall and Paul, Introduction (n 9) 18; Lewis (n 53) 80; J Stapleton, ‘Perspectives on Causation’ in Jeremy Horder (ed), *Oxford Essays on Jurisprudence: Fourth Series* (Oxford, Oxford University Press, 2000) 61, 82–84; Thomson (n 1) 150–51; Wright (n 13) 298–300, 305.

<sup>86</sup> See text to nn 27–29, 40 and 73 above.

<sup>87</sup> See text to n 35 above.

<sup>88</sup> Becht and Miller (n 53) 205–10; Mackie (n 9) 44–46; Wright (n 5) 1802. I now believe that my opposite conclusion, in Wright (n 5) 1802, for McLaughlin’s original version of this hypothetical, in which A emptied the keg and refilled it with salt and B subsequently stole the keg before C attempted to drink from it, is wrong for reasons set out in section III.I below.

<sup>89</sup> Stapleton (n 1) 439 fn 15. Since Moore refuses to treat negative conditions such as lack of water as causes or effects, he denies that either A or B caused C’s death, thereby treating the death as an uncaused miracle. Moore (n 1) 144, 466–67; see section III.H below.

<sup>90</sup> See Hart and Honoré (n 5) 239–41 and fn 74.

<sup>91</sup> Honoré (n 1) 378; see Honoré (n 10) 7–133.

occurrence of which thus is an unexplained miracle.<sup>92</sup> She later claimed (and apparently still does) that both A and B were causes. Her arguments for treating A as a cause fail to distinguish guaranteeing an outcome (here, death) from actually causing the outcome and erroneously assert that a lack of 'potable' or 'fresh' (unpoisoned) water is the same as a lack of water, while failing to focus on what actually caused C not to drink the water.<sup>93</sup> Even if we follow Stapleton by speculating about counterfactual scenarios rather than focusing on what actually happened, the poisoning of the water would not have caused C not to drink the water if the keg had not been emptied, since, under the usual understanding of the example, the poison was not detectable.<sup>94</sup>

A similar analysis applies in example 2, in which C actually drank the fatal dose of poison but was shot and killed before the poison had time to have fatal effect. The empirically derived causal generalisation for death by poisoning includes as a necessary condition, in addition to the person's drinking the poison, a minimum amount of time of the person's thereafter being alive: the time, determined empirically, that is required for the poison to have fatal effect, that is, for certain internal bodily processes to occur. (Strictly speaking, the occurrence of these bodily processes, rather than the passage of a certain amount of time, are the NESS conditions in the underlying causal laws; however, in causal generalisations we can and often do substitute for the bodily processes the time required for them to occur, especially when we have insufficient knowledge of the required bodily processes.) In example 2, the would-be poisoning victim is shot and dies after drinking the poison but before the specified required time of remaining alive in order for the poison to have fatal effect has elapsed. On the other hand, the causal generalisation and the underlying causal laws for death by shooting were fully instantiated.<sup>95</sup>

In example 3, the relevant causal generalisation for a ship's being delayed by a bridge's blocking the river includes the bridge's collapsing into and blocking the river, the ship's reaching the bridge while the bridge is blocking the river, and the ship's crew's seeing the bridge's blocking of the river and stopping the ship before it runs into the bridge. This causal generalisation was fully instantiated for bridge A, but not for bridge B. Although bridge B's collapsing into and blocking the river guarantees and thus is lawfully sufficient for the ship's being delayed and not reaching a point beyond the bridge by a certain time, it is not causally sufficient since all the antecedent conditions in the 'if' part of the relevant causal generalisation involving bridge B were not instantiated: the ship did not reach bridge B, and the ship's crew did not see bridge B blocking the river.<sup>96</sup>

Michael Moore acknowledges that the NESS account reaches the proper conclusion in a non-circular, non-question-begging way in 'early pre-emption' situations. His examples of

<sup>92</sup> See Stapleton (n 85) 82–84.

<sup>93</sup> *ibid*; J Stapleton, 'Unpacking "Causation"' in P Cane and J Gardner (eds), *Relating to Responsibility* (Oxford, Hart Publishing, 2001) 145, 178–83. For further elaboration of the flaws in Stapleton's arguments, see Wright (n 13) 298–300, 305; Wright, *Once More* (n 14) 1115–20.

<sup>94</sup> See Stapleton (n 93) 178 (poison was 'odourless'). If C did not know that the keg had been emptied but did not attempt to drink from it because she knew the water in it had been poisoned, A's poisoning of the water rather than B's emptying of the keg was the pre-emptive cause of C's death. See section III.I below.

<sup>95</sup> Fumerton and Kress (n 1) 100; Hart and Honoré (n 5) 124; Honoré (n 10) 7–130, 7–134; Thomson (n 1) 151; Wright (n 5) 1795.

<sup>96</sup> Fumerton and Kress (n 1) 100–01; Hart and Honoré (n 5) 250–51; Wright (n 5) 1796–97. Hart and Honoré agree that bridge A but not bridge B caused the boat's delay; however, they claim that bridge A did not cause any financial loss resulting from the delay if bridge B's collapse was not wrongfully caused. Hart and Honoré (n 5) 251. They have confused the causation issue with the normative issue of legal responsibility. Wright (n 5) 1797–98; Wright, *Legal Responsibility* (n 9) 1434–67.

early pre-emption are a two-fires case, in which ‘the first fire burns all the fuel around the house, so the second fire cannot get to the house to burn it’, and a case that is similar to example 1, in which ‘the shooter shoots the victim before he drinks any of the poisoned tea.’<sup>97</sup> He states:

One of the conditions needed to complete the set of which the second fire/poisoning was a part, was the fuel leading up to the house/the drinking of the tea by the victim. Therefore, there is no set (of which setting the fire/poisoning the tea are members) that is truly sufficient for death. Missing are some positive conditions, conditions not described in question-begging causal terms. Sufficiency theorists thus can get the right answers in cases of early pre-emption.<sup>98</sup>

However, Moore claims that attempts to use the NESS account to resolve the causal issue in ‘late pre-emption’ situations are circular and question-begging, because they allegedly simply amount to requiring that the effect was not already caused by something else.<sup>99</sup> His distinction between early pre-emption and late pre-emption is significantly different from the usual one. For Moore, early pre-emption situations are those in which ‘the pre-emptive cause removes something needed by the pre-empted factor to do any causal work’, while late pre-emption cases are those in which ‘there is no last event needed by the pre-empted factor and prevented by the pre-empting cause, save the ultimate effect itself’.<sup>100</sup> He treats the poison–shooting situation in example 2 above and a two-fires case in which the pre-empted fire approaches the already destroyed house from an opposite direction than the pre-emptive fire (and thus shares no fuel on the way to the doomed house) as late pre-emption cases,<sup>101</sup> and he claims that attempts to apply the NESS account in such cases by specifying, as alleged necessary conditions in the antecedent of the relevant causal generalisation, conditions such as ‘the house exists at the time the second fire arrived at the site’ or ‘the poison remaining in [the would-be victim P’s] body a certain amount of time while she is still alive’ are simply disguised circularity, since

the house existing, or [P’s] still being alive, is just there not being a house destruction or a death – and this, in a deterministic universe, is to say nothing else (other than the putative cause we are testing) caused such destruction or death.<sup>102</sup>

Moore’s argument ignores the distinction between the necessary conditions in the antecedent of a causal generalisation and the distinct condition that constitutes the consequent of the causal generalisation. Although to say that an entity exists or is alive at a certain time obviously entails (in our world) that nothing has caused the entity’s destruction or death prior to that time, it should also be obvious that the entity’s existence or being alive at a certain time is a state of affairs that is distinct from and not simply the converse of the destruction, death or non-existence of the entity at a later (remote or immediate) time;<sup>103</sup> rather, it is one of the necessary but by itself insufficient conditions for the occurrence of the later event or state of affairs. As Collins, Hall and Paul explain,

<sup>97</sup> Moore (n 1) 493.

<sup>98</sup> *ibid.*

<sup>99</sup> *ibid.* 494–95.

<sup>100</sup> *ibid.* 493. See text to n 69 above for the usual distinction between early pre-emption and late pre-emption.

<sup>101</sup> Moore (n 1) 493–94.

<sup>102</sup> *ibid.* 494.

<sup>103</sup> It is unfortunate that on this issue Moore fails to recognise or employ the rigorous distinction between distinct states of affairs that he correctly employs in distinguishing between acts and consequences to rebut various arguments by criminal theorists earlier in his book. See *ibid.* 14–19, 282.

When Suzy throws a rock at the window, breaking it, we naturally tend to think that there is just *one* sequence of events – the one initiated by Suzy’s throw – converging on the effect. But it is far better, at least for the purpose of systematic metaphysics, to see this effect standing at the intersection of *two* sequences of events: There is the interesting sequence just mentioned, and then there is the quite boring sequence consisting in the continued presence of the window, up to the moment it shatters. More generally, a proper theory of events almost certainly must count as such things that we ordinarily would classify as states, or standing or background conditions.<sup>104</sup>

In the two-fires example, the house’s destruction is an instantiation of the consequent of the causal generalisation for destruction by fire, which will occur only if all of the necessary conditions in the antecedent of that causal generalisation and its underlying causal laws are instantiated. The existence of the house as fuel when a fire reaches it is one of those necessary antecedent conditions, as much as the existence of the other fuel along the fire’s path to the house. All of the antecedent conditions were instantiated for the first fire to reach the house. At least one – the existence of the house when the fire reached it – was not instantiated with respect to the second fire, which arrived too late from the opposite direction.

The same analysis applies in the poison–shooting hypothetical. The NESS account requires that we empirically determine, as best we can, what set of conditions is minimally sufficient for a certain causal process to occur. By empirical observation and experimentation, we determine that a specific minimal amount of time is required for a specific poison to have fatal effect after the would-be victim drinks the poison. If we knew enough about the causal process involved, we could (but, as a practical matter, need not) replace this required elapsed time by the NESS conditions for which it is a placeholder: the steps of the physical process that must occur inside the victim’s body during this elapsed time. The victim’s remaining alive for the specified amount of time is included as one of the necessary conditions when specifying the causal generalisation. When we later investigate whether the poison caused the death in a particular situation, we check to see whether every one of the conditions specified in the antecedent of the causal generalisation was instantiated on the particular occasion. The elapsed time condition was not, so the complete instantiation required for causal sufficiency is not satisfied. Although we rely on our prior empirically derived causal generalisations, there is no circularity in our definition, identification or application of those generalisations.

Moore’s examples of late pre-emption actually are instances of early pre-emption given his definitions of those terms. Indeed, there are no actual pre-emption situations that fit Moore’s definition of late pre-emption, which rather is swallowed up by his definition of early pre-emption. Recall that he distinguishes late pre-emption situations from early pre-emption situations by the fact that, in the former, ‘there is no last event needed by the pre-empted factor and prevented by the pre-empting cause, save the ultimate effect itself’.<sup>105</sup> In both his two-fires hypothetical and his poison-shooting hypothetical, there *is* an ‘event’

<sup>104</sup> Collins, Hall and Paul, Introduction (n 9) 44; see Fumerton and Kress (n 1) 90 (‘John’s stabbing Mary in the heart caused her death because it was a necessary element in a set of actual conditions – including her being alive at the time that she was stabbed’); Hall (n 14) 231 (‘among the causes of the June [forest] fire is not just the lightning but also the very presence of the forest, filled with flammable material’); *ibid* 244 (noting that the causal history of a bombing by a plane includes the process of the flying of the plane and ‘less conspicuously, the process consisting in the persistence of the target’); Strevens (n 13) 103–04 (a jar must be in existence when a ball reaches it in order for the throw of the ball to cause the shattering of the jar); Thomson (n 1) 149 (including in a causal generalisation for a thrown rock’s breaking of a window the condition of the window’s remaining in the place where it was when the rock was thrown for at least the amount of time it would take the rock, thrown at a specified velocity, to reach that place).

<sup>105</sup> See text to n 100 above.

(a state of affairs) needed by the pre-empted factor and prevented by the pre-empting cause – the existence of the house when the second fire reaches it and the would-be victim's remaining alive for a specific amount of time after drinking the poison, respectively – that is *not* the 'the ultimate effect itself' (the destruction of the house or the death of the victim, respectively) and may not even have been the last event or state of affairs needed by the pre-empted factor in order for it to be a cause. Consider, for example, the necessity of the house's not only still being in existence when the second fire arrives but also being sufficiently dry and remaining so for some period thereafter and with sufficient oxygen (necessary for combustion) being present and remaining present for some period thereafter.

Moore discusses a modified version of the two-bridges hypothetical as an example of a third, supposedly distinctive, 'trumping' type of pre-emption that he claims creates the worst problems for the NESS account, since pre-emption allegedly exists even though the pre-empted factor 'runs its whole course'.<sup>106</sup> Moore changes the hypothetical by having the boat's captain be aware of both collapsed bridges prior to the stopping of the boat, although he continues to assume that the captain stopped the boat solely because of the collapse of bridge A.<sup>107</sup> This is a plausible assumption, especially if, after becoming aware of the collapse of both bridges, the captain proceeded down the river until he reached bridge A. However, it could also be the case that the captain's knowledge of the collapse of bridge B was a duplicative, reinforcing positive reason for, and hence a cause of, his stopping the boat, rather than a pre-empted factor.<sup>108</sup>

The second, reinforcement rather than pre-emption, description of the causal situation seems more likely in the other example of 'trumping' pre-emption that Moore discusses, which also has been discussed by Jonathan Schaffer. In this example, a major and a sergeant each simultaneously order the same soldiers to advance. Schaffer and Moore assume that the soldiers advance solely due to the order of the major, although they normally would have obeyed the sergeant's order.<sup>109</sup> While the major's order will (or should) pre-empt the sergeant's order when their orders conflict, when their orders are consistent it seems to me that the sergeant's order will continue to be a positive reason for advancing that reinforces the reason provided by the major's order, rather than its being completely without effect.<sup>110</sup>

Nevertheless, if we assume, along with Schaffer and Moore, that the soldiers advanced solely due to the major's order, no new type of pre-emption has been discovered and no new difficulties are created for the NESS account. The applicable causal generalisation is assumed to contain as a necessary antecedent condition for the effectiveness of an order that it be the highest-ranking relevant order. This antecedent condition was instantiated for the generalisation as applied to the major's order, but not for the same generalisation as applied to the sergeant's order, which thus, contrary to Moore's assumption, did not 'run its whole course'.<sup>111</sup> If the sergeant's order indeed had 'run its whole course' – that is, if the relevant causal laws were fully instantiated by a set of conditions including the sergeant's

<sup>106</sup> Moore (n 1) 494–95.

<sup>107</sup> *ibid* 495. Moore treats my previously published analysis of the original version of this hypothetical as if it were my analysis of his modified version of the hypothetical. *ibid*.

<sup>108</sup> See section III.F below.

<sup>109</sup> Moore (n 1) 494–95; Schaffer (n 14) 67; see Coady (n 53) 333–35; Lewis (n 53) 81.

<sup>110</sup> See section III.F below.

<sup>111</sup> The same analysis applies to Schaffer's primary illustration of trumping pre-emption, which assumes that a necessary condition in the antecedent of the relevant causal law for the effectiveness of a magical spell is that it be the first spell cast during the relevant time period. Schaffer (n 14) 59; see Lewis (n 53) 81. It also applies to Collins, Hall and Paul's neuron example, which assumes a causal law according to which a neuron fires with the same polarity as the most intense incoming signal. Collins, Hall and Paul, Introduction (n 9) 27–28.

order but not the major's order – then the sergeant's order (as well as the major's order) was a cause of the soldiers' advance.<sup>112</sup> As John Collins states, examples like this offered to illustrate a supposed distinct type of pre-emption 'owe what plausibility they have to a confusion of causes with norms – the only sense in which a major's order clearly *trumps* a sergeant's order rather than pre-empting it in some other way is a normative sense'.<sup>113</sup>

For proper resolution of the two-bridges hypothetical, as modified by Moore, we need to know more about the thought processes in the captain's brain. If he was determined to proceed down the river until forced to stop by a physical obstruction, then the relevant causal generalisation includes as a necessary antecedent condition the boat's reaching the physical obstruction. This condition was instantiated with respect to bridge A but not with respect to bridge B, so bridge A's collapse, but not bridge B's collapse, was a cause of the boat's stopping and thus of the delay in reaching Metropolis. If, instead, the captain's learning of a blockage of the river was causally sufficient for his stopping the boat as soon as he learned of the blockage (or at the nearest convenient stopping point short of the first blockage), then bridge A's collapse and bridge B's collapse (more precisely, his knowledge of or belief regarding each collapse) were duplicative causes of the boat's stopping and the delay in reaching Metropolis. If, on the other hand, as implicitly assumed by Moore, the relevant causal generalisation includes as a necessary antecedent condition not only knowledge of an obstruction but also that the knowledge be knowledge of the nearest known obstruction, then (knowledge of) bridge A's collapse, but not bridge B's collapse, was a cause of the stopping of the boat and the delay in reaching Metropolis.

## E. Duplicative Causation

It is generally acknowledged that the NESS account, by requiring causal strong sufficiency rather than strong necessity, properly handles situations involving duplicative causation by two or more independently strongly sufficient conditions, such as two independently sufficient fires or floods that merge and destroy a building, which the *sine qua non* account mishandles since none of the conditions 'made a difference' by being a 'but for' cause.<sup>114</sup> However, some have questioned the NESS account's handling of a condition that was not, or could not be proven to be, either strongly necessary or independently strongly sufficient – eg, each of 10 drops of poison or discharges of pollution when only three such drops or discharges were necessary for the occurrence of the relevant harm. Such situations are quite common – eg, in the frequent cases of multiple fires, flood waters, noises, weights, pollutants, toxic substances and other conditions that combine to cause a particular harm<sup>115</sup> or a more-than-sufficient number of individual affirmative votes under non-unanimity voting rules.<sup>116</sup>

<sup>112</sup> cf Strevens (n 13) 104 ('If there were a set of veridical conditions entailing that the mother's [supposedly pre-empted] ball hits the jar, it would indeed have hit the jar. But then it would, intuitively, be a cause of the breaking, in which case Mackie's [weak-necessity] account would be correct in deeming it so.')

<sup>113</sup> Collins (n 69) 114. Schaffer acknowledges that this example could be a case of 'standard pre-emption', in which causal processes in the soldiers' brains filter out the sergeant's order or only respond to highest-ranked orders. Schaffer (n 14) 67.

<sup>114</sup> eg Fumerton and Kress (n 1) 96–97; Moore (n 1) 474. There is considerable disagreement over its ability to handle overdetermined *failure* of a causal process. See section III.I below.

<sup>115</sup> Wright, Legal Responsibility (n 9) 1444–45; text to nn 10–11 and 40–41 above.

<sup>116</sup> See Stapleton (n 1) 443.

My initial elaborations of the NESS account handled these situations by using subsets of existing conditions or ‘at least so much’ descriptions of an existing condition to construct minimally sufficient sets of existing conditions, for the sufficiency of which the inclusion of the non-independently-sufficient condition was necessary.<sup>117</sup> Some critics have objected that doing so involves hypothetical, counterfactual reasoning – in particular, an assumption that the conditions not included in the described subset or the at-least-so-much nature of an included existing condition did not actually exist.<sup>118</sup> This is not true. The non-included existing conditions or greater-than-at-least-so-much nature of an included condition are simply ‘roped off’ while determining whether the described existing conditions constituted a minimally sufficient set. Indeed, I have always emphasised that one must double-check to make sure that the roped-off existing conditions or their roped-off nature did not prevent the complete instantiation of the antecedent of the relevant causal generalisation and its underlying causal laws.<sup>119</sup>

In any event, the objection to these methods of disaggregating existing conditions is mooted when the necessity aspect of the NESS account is confined, as it is in my later elaborations of the NESS account, to the relevant causal generalisations and their underlying causal laws. Under this simpler, more straightforward definition of a NESS condition, no disaggregation of existing conditions is necessary. A NESS condition need merely be part of the instantiation of one of the abstract conditions in the antecedent of an applicable causal law, all the conditions of which were at least minimally instantiated. It does not matter if some or all of them were more than minimally instantiated, although – I again emphasise – care must be taken to ensure that the more-than-minimal instantiation of some antecedent condition did not prevent the instantiation of some other antecedent condition.<sup>120</sup>

Moore acknowledges the validity and usefulness of the NESS account’s ability to identify as causes conditions that were neither strongly necessary nor independently strongly sufficient, while also noting and criticising the consequent increased proliferation of causes.<sup>121</sup> David Fischer also objects to the proliferation of causes and questions the validity of recognising trivial contributions as causes – eg, a teaspoon of water added to a flooding river or a match added to a raging forest fire.<sup>122</sup> Yet the teaspoon of water and the match contributed to and are part of the flood and forest fire, respectively. What if the same flood or fire

<sup>117</sup> Wright (n 5) 1792–94; Wright, *Legal Responsibility* (n 9) 1444–45; Wright, *Once More* (n 14) 1106–07; Wright (n 3) 1035–39. Fischer asserts that *Warren v Parkhurst* 92 NYS 725 (NY Sup Ct. 1904), affirmed 93 NYS 1009 (NY App Div 1905), affirmed 78 NE 579 (NY 1906), which I have used to illustrate judicial recognition of causation by conditions that were neither necessary nor independently strongly sufficient, is not a ‘pure’ example. Relying on the distinction between ‘[legal] injury’ and ‘[actual] harm’ – a distinction the *Warren* court did not make – Fischer argues that, although the pollution by each of the 26 defendants was neither necessary nor independently sufficient for the ‘fixed threshold of stench’ that constituted the required legal injury, each defendant’s pollution was necessary for some separable part of the recoverable harm. Fischer (n 1) 285. He ignores the court’s statements that each defendant’s pollution by itself ‘would not cause any material change to the plaintiff by way of noxious smell’ but rather would be ‘merely nominal’ and would not support any liability.

<sup>118</sup> Kelman (n 1) 603–04; DA Fischer, ‘Causation in Fact in Omission Cases’ (1992) *Utah Law Review* 1335, 1359, 1362; Fischer (n 1) 303–04, 307–08; Stapleton (n 85) 83–84.

<sup>119</sup> eg Wright (n 13) 295–97; Wright, *Legal Responsibility* (n 9) 1444–45; Wright (n 3) 1035–37; see n 13 above. Strevens usefully discusses the difference between assuming the negation of some condition and simply setting it aside with no assumption as to whether or not it exists. Strevens (n 13) 96–97. Moore and Thomson recognise this distinction. Moore (n 1) 489–90; Thomson (n 1) 148, 156–59. Fischer and Stapleton do not. See Fischer (n 1) 303–04, 307–08; Stapleton (n 1) 472.

<sup>120</sup> See text to nn 40–41 above.

<sup>121</sup> Moore (n 1) 487–91.

<sup>122</sup> Fischer (n 1) 290–91; see Restatement Third (n 1) s 27 comment i (initially suggesting the correct causal analysis but then analogising these duplicative causation situations to quite different pre-emptive causation situations).

were caused by a million (or many more) different people all contributing a teaspoonful of water or a single match? Denying that any of the teaspoonfuls or matches contributed to the destruction of the property that was destroyed by the flood or fire would leave its destruction as an unexplained, non-caused miracle. As a pure matter of causation, it cannot possibly matter whose hands supplied the different bits of water, flame or fuel. What is driving the intuition of no causation is the judgment regarding attributable responsibility, which is especially brought to mind if the question is posed as ‘Did the teaspoon of water or match destroy the property?’ rather than ‘Did the teaspoon of water or match contribute, even if only extremely minimally, to the flood or fire that destroyed the property?’ What is generally agreed upon is that the trivial contributor should not be held liable when her contribution was trivial in comparison to the other contributing conditions and was neither strongly necessary nor independently strongly sufficient for the injury at issue, but this is a normative issue of attributable responsibility rather than causal contribution.<sup>123</sup>

Stapleton also acknowledges the validity and usefulness of this application of the NESS account, but she claims that I have failed to provide any reasons or justifications for it – or at least for the law’s use of it – and have thereby (how?) made the NESS account ‘incoherent’.<sup>124</sup> To the contrary, the reasons that Stapleton gives for endorsing it, and the NESS account as a whole as the proper ‘algorithm’ for identifying causal ‘involvement’ or ‘contribution’,<sup>125</sup> are the same ones that I have repeatedly emphasised: the obvious need, in what is intended to be a comprehensive account of causation, to be able to identify all instances of causation, and the related need – especially in legal analysis – to distinguish the normative and context-specific purposive considerations that are often confused with the causation issue, which instead should be explicitly recognised, labelled and discussed as non-causal reasons for focusing on and attributing responsibility to only some of the many conditions that contributed to the occurrence of some consequence.<sup>126</sup>

It is Stapleton, rather than I, who has a history of failing to make this distinction.<sup>127</sup> Her failures have been encouraged by Fischer, who refuses to distinguish between causation as a

<sup>123</sup> Restatement Third (n 1) s 36; Fischer (n 1) 289–90; Wright, *Legal Responsibility* (n 9) 1448–50 and fn 84.

<sup>124</sup> Stapleton (n 1) 474–76.

<sup>125</sup> *ibid* 444, 474; Stapleton (n 93) 174. However, Stapleton’s supposed elaboration of the NESS account differs greatly from that account by employing a doubly counterfactual ‘duplicate necessity’ analysis of strong necessity rather than a real-world analysis of causal sufficiency. She treats a condition as a cause if it would have been strongly necessary in the counterfactual world in which the condition(s) that prevented it from being strongly necessary in the real world did not exist. Stapleton (n 1) 433, 436, 441–44, 472–74, 479; J Stapleton, ‘Legal Cause: Cause-in-Fact and the Scope of Liability for Consequences’ (2001) 54 *Vanderbilt Law Review* 941, 959–60; Stapleton (n 93) 175–85. This method of analysis, which unfortunately is adopted in s 27 of the Restatement Third, fails to distinguish duplicative causation from pre-emptive causation and is substantially over-inclusive and under-inclusive in both types of situation. See Restatement Third (n 1) s 27; Wright, *Once More* (n 14) 1110–15 and fn 149; Wright, *Legal Responsibility* (n 9) 1450–51 fn 86. The authors of the Restatement Third try to paper over these defects in comments that limit s 27 to duplicative causation situations, without providing any (non-viciously-circular) criteria for distinguishing the two types of situations, and that refer pre-emptive causation situations to supposed resolution by s 26’s *sine qua non* test, which, however, cannot properly resolve pre-emptive causation situations. See Restatement Third (n 1) s 26 comment k, s 27 comments e and h. A recent case thus wisely moves past the blackletter sections of the Restatement Third to focus instead on the NESS-based ‘causal sets’ analysis that is employed in the comments to sections 26 and 27. *June v Union Carbide Corp* 577 F3d 1234, 1242–44 (10th Cir 2009); see Restatement Third (n 1) s 26 comments c, d, i and k, s 27 comments a, b, e, f, g, h and i, and related reporters’ notes.

<sup>126</sup> eg Wright (n 5) 1737–58, 1764 fn 121, 1781–83, 1791–92; Wright, *Legal Responsibility* (n 9) 1437–40; Wright, *Once More* (n 14) 1072–82, 1111, 1119–23; Wright (n 3) 1004–18; see Stapleton (n 1) 433, 441–42, 445–46, 455–58, 463–64, 473–77, 479–80; section III.J below.

<sup>127</sup> See Stapleton, *Legal Cause* (n 125) 957 fn 38, 966–68 and fns 60 and 61; Stapleton (n 85) 61, 62–66 and fn 13, 77 fn 40, 79–80, 81–84; Wright, *Once More* (n 14) 1101 fn 108, 1111–13, 1119–23.

purely scientific matter and attributable legal responsibility and instead seeks to have 'causal' judgments depend on intuitive judgments of legal responsibility, but who nevertheless ultimately agrees for practical reasons with the American Law Institute's finally making this distinction in the Restatement Third (after having confused students, lawyers and courts for decades by its failure to do so in the first and second Restatements).<sup>128</sup> Stapleton, while now claiming to support the distinction, instead abandons it and undercuts her primary argument – that the law should choose 'involvement' (as identified by the NESS 'algorithm') as the sole 'interrogation' regarding 'causation' in the law<sup>129</sup> – when she claims that there is no core empirical or metaphysical concept of causation, so that (as bluntly asserted by Lord Hoffmann at the conference at which the initial version of this chapter was presented), judges and others can and should define causation in any manner that suits their particular purposes:

[Schaffer's attempt to provide an account of causation] is the same doomed concept of many other philosophers: a search for 'a broad and nondiscriminatory concept' of causation. In contrast to Schaffer's passing flirtation with the idea that such a concept might be 'a philosopher's myth,' the central argument of this article is that it is indeed a myth.<sup>130</sup>

It is futile for philosophers to search for a coherent freestanding metaphysical account of 'causation' unless a choice of underlying interrogation (blame, explanation, physical role, any sort of involvement etc) is specified *at the outset*.<sup>131</sup>

Stapleton's seeming radical scepticism about there being any core concept of causation runs counter to her discussions of her concept of 'involvement', which she states is meant to encompass and be limited to the natural scientific relation that we call 'causation' and is determined objectively by reference to the physical laws of nature, excluding any normative considerations.<sup>132</sup> As she seems to recognise, all the other 'interrogations' (regarding blame, responsibility, contextual salience and so forth) that loosely employ causal language use this core concept of causation but also use normative or other purposive or pragmatic considerations to focus on only some of the contributing conditions and to limit attribution of responsibility even for those contributing conditions.<sup>133</sup> While she often seems to argue otherwise,<sup>134</sup> the purposive considerations that determine the particular focus of the causal enquiry do not result in different concepts of causation being employed once the focus has been set.<sup>135</sup>

<sup>128</sup> See Fischer (n 1) 284–92, 312–13, 317; Wright, *Once More* (n 14) 1074–80, 1121 fn 172.

<sup>129</sup> Stapleton (n 1) 433, 441–44, 455, 473–74; see nn 125–26 above.

<sup>130</sup> Stapleton (n 1) 439 fn 15 (quoting J Schaffer, 'Contrastive Causation' (2005) 114 *Philosophical Review* 327, 350).

<sup>131</sup> *ibid* 439; see *ibid* 447 (same), 456 ('causal language can denote whatever we choose it to'), 459 (same).

<sup>132</sup> *ibid* 433–37, 444, 446, 452–53 and fn 45, 455, 474, 479–80. However, if by 'physical laws of nature' Stapleton means the mathematical formulations of such laws, which do not incorporate the critical interrelated concepts of causal sufficiency and directionality, she is relying on the inadequate notion of mere lawful relation. See Collins, Hall and Paul, Introduction (n 9) 16, 34; text to nn 80–87 above. In a note, she refers to theoretical physicist Richard Feynman's description of physical laws in terms of 'the principle of least action' and restraints on and increasing entropy within a physical environment, but this is not a description that provides a basis for identification of singular instances of causation in law or ordinary life. See Stapleton (n 1) 440 fn 16 (citing R Feynman, *The Character of Physical Law* (New York, Random House Modern Library, 1994) 46).

<sup>133</sup> See Stapleton (n 1) 440–41, 444–46, 448–51, 455–64; Collins, Hall and Paul, Introduction (n 9) 36–37; Hall (n 14) 228–31; Fumerton and Kress (n 1) 87–88; Honoré (n 10) 7–49 to 7–53; Thomson (n 1) 160–63; Wright (n 5) 1741–50; Wright (n 3) 1011–14.

<sup>134</sup> Stapleton (n 1) 437, 439–41 and fn 15, 444, 445–46, 447, 451, 476–77 and fn 149.

<sup>135</sup> Wright (n 5) 1788–1803.

Stapleton's basic point seems to be that it is impossible to provide a comprehensive, non-circular account of this core concept of causation – even though she seems to assume that her concept of 'involvement' has succeeded in doing so. More specifically, she asserts that, although the NESS account (which she claims to employ and in tight spots does employ) is a very useful 'algorithm' for identifying all instances of 'involvement', it does not capture the essence or meaning of causation.<sup>136</sup> Yet, if, as she concedes,<sup>137</sup> the NESS account is able to identify all instances of causation (and its lack) given sufficient information about existing conditions and the relevant causal laws, hasn't it then (as she once stated<sup>138</sup>) captured the essence of causation and given it a comprehensive specification and meaning? Her claim that it has not seems to be based primarily on the charge that the NESS account, by referring to the interrelated concepts of 'causal sufficiency' and 'causal laws', engages in 'vicious conceptual circularity'<sup>139</sup> – a claim that I have rejected above,<sup>140</sup> but which applies to her own 'involvement' account.<sup>141</sup>

## F. Reasons as Causes

The NESS account's ability to identify conditions that were neither strongly necessary nor independently strongly sufficient as causes applies to and is especially useful for accounting for human decisions and actions, which often are based on multiple reasons, none of which may have been – or can be proven to have been – strongly necessary or independently strongly sufficient for the particular decision or action.<sup>142</sup>

Hart and Honoré acknowledge that loose generalisations apply to human decisions and actions, but they deny that these decisions and actions are governed by causal laws. They point out that it is not practically possible to specify all the conditions sufficient to produce a certain decision, and they deny that the same decision or action necessarily would be taken in the same situation by the same person at different times or by different persons at the same or different times.<sup>143</sup>

The first point is true, but it does not differentiate human decisions and actions from other causal processes. We can and do make plausible singular causal statements based on incomplete knowledge of the causal laws that underlie the causal generalisations that we employ.<sup>144</sup>

<sup>136</sup> Stapleton (n 1) 472–74 and fn 145, 477; *contra* Honoré (n 1) 367 (treating the NESS account as capturing the meaning of natural causation as well as being a useful test for identifying natural causes).

<sup>137</sup> Stapleton (n 1) 444, 474.

<sup>138</sup> Stapleton (n 93) 174, 179.

<sup>139</sup> Stapleton (n 1) 472–73 and fn 145.

<sup>140</sup> See nn 25–34 above.

<sup>141</sup> Stapleton asserts that her use of the term 'involvement' 'avoid[s] circular causal terminology'. Stapleton (n 1) 436. Yet not only does 'involvement' imply causal contribution, she explicitly defines 'involvement' as 'contribution' in her delineation of her three forms of 'involvement', states that 'involvement' is determined through our knowledge of 'the physical laws of nature', for which she provides no usable definition or elaboration, and endorses the NESS account, with its allegedly circular reliance on causal laws, as the proper 'algorithm' for identifying all three forms of involvement. *ibid* 433–37, 441–44, 446, 452–53 and fn 45, 472–74, 479–80; text to n 125 above.

<sup>142</sup> Wright (n 13) 297–98; Wright (n 3) 1035–37. Stapleton ignores these sources when she asserts that 'Wright does not adequately address . . . whether it is coherent, acceptable, convenient or wise notionally to disaggregate an individual person's decision'. Stapleton (n 1) 476.

<sup>143</sup> Hart and Honoré (n 5) xxxvii, 2, 22–23, 55–61; Honoré (n 1) 363, 382, 384; Honoré (n 10) 7–53, 7–168.

<sup>144</sup> See text to nn 35–39 above.

The second point also is true, but it is true only because all the relevant conditions are not the same. As Honoré notes, even for the same person, there is the additional information provided by the similar past experience.<sup>145</sup> There also is the additional information provided by other intermediate experiences, other sources of new knowledge, and possibly different decision criteria due to, eg, changed goals and attitudes towards risk. Two different persons have different experiences, genetic makeup and goals.

Honoré agrees that attributions of reasons for decisions or actions involve a belief that the (known and unknown) reasons in the aggregate were sufficient (along with other relevant conditions) for the decision or action, although none of them may have been strongly necessary or independently strongly sufficient. He treats such reasons as 'necessary elements in a set of reasons together sufficient' for the relevant decision,<sup>146</sup> and he cites with apparent approval my application of the NESS account to such reasons.<sup>147</sup> However, he claims that the sense of sufficiency is different than for physical sequences.<sup>148</sup> The difference he seems to have in mind is the alleged lack of repeatability in the same circumstances, but this is contrary to the assumed sufficiency of the set of conditions, including reasons, on the particular occasion. As I have previously noted, if all the relevant conditions were jointly sufficient in the first instance, they will also be jointly sufficient in subsequent instances involving the same set of relevant conditions:<sup>149</sup>

[I]f *all* the relevant conditions (accumulated experience and knowledge, beliefs, goals, mood, and so forth) were the same, surely the decision or action would also be the same. To assert otherwise is to assert that human action is random or arbitrary. Human action is less regular and predictable than physical events because humans learn from prior experiences and new information, the range of relevant conditions is much broader, and the applicable causal generalizations are much more complex and less well understood.<sup>150</sup>

The fact that the applicable causal generalisations and the underlying causal laws for human decisions are much more complex and less well understood than those for physical events often makes it especially difficult to determine what decision a person would have made if she had been provided with some information or opportunity that was not provided. In a recent essay, I erroneously stated that we need to have this question answered, and thus must use (highly restricted) counterfactual analysis, to resolve the causal issue in situations in which the defendant tortiously failed to provide some safeguard (information or device), which if provided and used would have prevented the injury that occurred.<sup>151</sup> The causal issue in such situations involving the failure of a preventive causal process instead should be resolved, without any counterfactual analysis, by using the method of analysis that is discussed in sections III.H and III.I below.

As is discussed in section III.I, the lack of an attempt to access and use a safeguard pre-empt the potential failure of the preventive causal process (involving the successful use of

<sup>145</sup> Honoré (n 1) 382.

<sup>146</sup> *ibid* 383.

<sup>147</sup> *ibid* 377 fn 40 (citing Wright (n 3) 1035–37).

<sup>148</sup> *ibid* 383–85; see Honoré (n 10) 7–121.

<sup>149</sup> Although Mackie argues for strong necessity rather than strong sufficiency when identifying singular instances of causation, see text to nn 19–22 above and nn 156–58 below, he agrees that there is a single basic concept of natural causation that applies equally to physical events and human decisions and actions. Mackie (n 9) 122–26.

<sup>150</sup> Wright (n 13) 298.

<sup>151</sup> *ibid* 301–02; see V Black, 'Decision Causation: Pandora's Tool-Box' in J Neyers, E Chamberlain and SGA Pitel (eds), *Emerging Issues in Tort Law* (Oxford, Hart Publishing, 2007) 309.

the safeguard) at the subsequent stage in that process, never reached, in which the attempt would have failed due to the non-provision of the safeguard. However, the non-provision of the safeguard nevertheless was a cause of the non-prevented injury if (unlike the braking situation discussed in section III.I) the lack of an attempt to use the safeguard was caused by its non-provision – for example, by knowledge of its non-provision or, conversely, by lack of knowledge of its possible availability due to its non-provision.

As in other overdetermined causation situations, the causal issue in these non-provided-safeguard situations unfortunately is often confused with the ‘no worse off’ limitation on attributable responsibility, which generally treats the defendant as not being legally responsible for an injury, despite having tortiously contributed to its occurrence, if the injury would have happened anyway due to non-liability-generating conditions – for example, if a plaintiff (who cannot sue himself) would not have used the information or safeguard even if it had been provided.<sup>152</sup> To resolve this attributable responsibility issue in these and other pre-emptive causation situations, (highly restricted) counterfactual analysis will be required.

Treating human decisions, like other biologically based mental processes, as subject to causal laws is not incompatible with a plausible conception of free will, given the very complex, goal-directed nature of human decision-making. Indeed, to treat human decisions as not being subject to causal laws would imply that they are arbitrary and irrational, rather than free in the sense of being based on one’s interests and goals. On the other hand, as I will explain in the next section, the presence of a random or probabilistic element in human decision-making would not undermine the concept of causation or make it impossible to provide causal explanations of human decisions and actions.

## G. Indeterminism and ‘Probabilistic Causation’<sup>153</sup>

In a radically indeterministic world, in which nothing was (weakly or strongly) necessary or sufficient for anything else, the concepts of causation and probability likely would not exist due to lack of instantiation. Our world is at most only partially indeterministic – that is, probabilistic. A great many apparently probabilistic processes appear to be so only because we have insufficient knowledge of the underlying causal laws and turn out on closer examination to be deterministic.<sup>154</sup> As far as we know all apparently indeterministic processes may be deterministic. As Mackie stated, the difficulty one encounters in trying to describe truly indeterministic statistical ‘laws of working’ reinforces doubt about their existence. Such a law would seem to require an objective chance or propensity inherent in each individual occurrence of the antecedent conditions, but one can deny the existence of such objective entities with arguments similar to those used to deny the existence of objective causal qualities or powers in deterministic processes. Mackie concluded that the only workable formulation would be a limiting frequency on actual outcomes of a series of instances of a certain set of antecedent conditions. Yet, he noted, this formulation deprives such statistical laws of explanatory power. There is no apparent way to explain, without invoking deterministic

<sup>152</sup> See Wright, *Legal Responsibility* (n 9) 1434–78.

<sup>153</sup> Portions of this section are taken, with minor modifications, from Wright (n 3) 1028–31.

<sup>154</sup> See Mackie (n 9) 49–50, 76, 237–38, 242–46.

laws, why an actual series does or should approach a limiting frequency. Truly indeterministic or probabilistic laws, therefore, are unintelligible and mysterious.<sup>155</sup>

However, Mackie and others have used the theoretical possibility of partially indeterministic processes to argue against the universal applicability of a strong-sufficiency account of causation and, indeed, for the preferability of the *sine qua non* account. Mackie postulates a candy machine L that never produces candy unless a shilling is inserted, but sometimes, due to indeterminism, does not produce candy even when a shilling is inserted. He assumes that this means that the insertion of a shilling in machine L is strongly necessary but not strongly sufficient for the machine's production of candy, and that, since whenever candy is produced we will treat the strongly necessary condition of the insertion of the shilling as a cause, strong sufficiency is not necessary for causation, but strong necessity is.<sup>156</sup>

Fumerton and Kress make the same argument using a similar example: a bomb activated by the indeterministic decay of a radioactive element, which has a very low probability of going off during the intended victim's lifetime but which nevertheless does go off a few minutes after being planted and kills the intended victim. However, countering Mackie, they note that even the *sine qua non* account will not properly identify the decay-activated bomb as a cause if there was a backup deterministically activated bomb.<sup>157</sup>

Mackie, Fumerton and Kress incorrectly assume that there is a lack of strong sufficiency in these examples. They seem to assume that the planting of the bomb or the insertion of the shilling must be sufficient all by itself – a situation that is rarely if ever true. The planting of the bomb or the insertion of the shilling need only be one of the conditions that are each necessary for the sufficiency of the set of conditions that constitutes the antecedent of the relevant causal law. Another of those conditions in each example is the occurrence of the specified indeterministic state or event: the decay of the radioactive element in the bomb or the unknown indeterministic state or event in the candy machine, respectively. When the bomb explodes or the machine produces candy, the planting of the bomb or the insertion of the shilling, respectively, was both strongly necessary and strongly sufficient for the occurrence of that result, as was the occurrence of the relevant indeterministic state or event.

Mackie's other candy machine hypothetical demonstrates, contrary to what he intended, that causation requires causal (rather than merely lawful) strong sufficiency rather than strong necessity. This machine, M, always produces candy when a shilling is inserted, but occasionally, as a result of some mysterious indeterministic process, produces candy even though no shilling was inserted. Mackie assumes that the insertion of a shilling in machine M is strongly sufficient but not strongly necessary for the production of candy. He asserts

<sup>155</sup> Mackie (n 9) 239–47; see Wright (n 3) 1029, 1042–49. Some believe that the notion of deterministic causation collapsed with the announcement in 1927 of Heisenberg's uncertainty principle. That principle, even if valid, merely states that it is impossible to measure simultaneously the position and velocity of an object so that the product of the uncertainties in measurement is less than an infinitesimally small constant – about 10 to the minus 34th power joule-seconds. 10 *Encyclopaedia Britannica, Micropaedia*, 15th edn (1979) 253. While this might cause problems in hypothetical lawsuits between subatomic particles, it creates no problems at the macroscopic level of events in everyday life. Others believe that the notion of causation collapsed with the introduction of functional equations in science. Yet functional relationships in science are merely mathematically quantified statements of causal laws or generalisations, which usually are expressed through time-based derivatives of the regularities of succession that constitute ordinary causal generalisations. Mackie (n 9) 143–48, 153–54, 216–18. The concept of causation is alive and well in the natural and social sciences.

<sup>156</sup> Mackie (n 9) 41–43.

<sup>157</sup> Fumerton and Kress (n 1) 97–98.

that when candy is produced by machine M following the insertion of a shilling, we will be unable to say whether the production of the candy by machine M was caused by the insertion of the shilling or by the indeterministic process. He concludes that strong sufficiency is not sufficient to establish causation; rather, strong necessity is required.<sup>158</sup>

Yet, when candy is produced after a shilling is inserted in machine M, we know by definition that the insertion of the shilling produced the candy through the deterministic process, if the insertion of a shilling is *causally* strongly sufficient for the production of candy. What we do not know is whether the probabilistic event and its associated indeterministic process also occurred, since we have no knowledge of and cannot directly observe the probabilistic event or its associated indeterministic process. If the probabilistic event did not occur, the candy was produced solely by the deterministic process. If the probabilistic event did occur, then either the candy was duplicatively produced by both the deterministic and the indeterministic processes (if the probabilistic event also was causally strongly sufficient) or else the candy was produced solely by the deterministic process, which pre-empted the indeterministic process. Thus, no matter what happened with the indeterministic process, the insertion of the shilling was a (duplicative or pre-emptive) cause of the production of the candy.

This conclusion is logically compelled by the definition of causal strong sufficiency, if the insertion of a shilling is causally strongly sufficient for the production of candy in machine M. If that assumption is removed, so that we only have the empirical observation that machine M produces candy whenever a shilling is inserted, but sometimes produces candy although nothing was inserted, then Mackie is right when he insists that we cannot say on any particular occasion that the insertion of the shilling was a cause of the production of the candy. In the absence of the causal strong sufficiency assumption, it is possible that the deterministic process initiated by the insertion of the shilling was pre-empted by the indeterministic process. But this reinforces the argument that causation requires causal strong sufficiency. When we assumed that causal strong sufficiency existed, we were compelled to conclude that the insertion of the shilling caused the production of the candy. When we dropped the causal strong sufficiency assumption, we no longer could identify the cause(s) of the candy's production.

In sum, Mackie's indeterministic machine hypotheticals, and others like them,<sup>159</sup> demonstrate the reverse of what he claims. They demonstrate that attributions of causation, even in a partially indeterministic world, depend on the causal strong sufficiency requirement embodied in the NESS account rather than the strong necessity requirement embodied in the *sine qua non* account.

## H. Omissions and Negative Causation

We routinely identify omissions, such as the failure to water a plant or to pay attention while driving, as causes of some result, such as the death of the plant or a traffic accident, respectively. However, there is reason to question whether omissions or other negative conditions can actually be causes or effects. As John Stuart Mill, who provided the philosophical foundation of the NESS account, observed, 'From nothing, from a mere negation, no

<sup>158</sup> Mackie (n 9) 41–43.

<sup>159</sup> See eg, Collins, Hall and Paul, Introduction (n 9) 26–27. Their examples nicely illustrate the defectiveness of attempts to define causation in terms of increased probability. See also Wright (n 3) 1042–49.

consequences can proceed.<sup>160</sup> Mill nevertheless saw the need to include negative conditions as causal (NESS) conditions:

We say for example, The army was surprised because the sentinel was off his post. But since the sentinel's absence was not what created the enemy or put the soldiers asleep, how did it cause them to be surprised? All that is really meant is, that event would not have happened if he had been at his duty. His being off his post was no producing cause, but the mere absence of a preventing cause: it was simply equivalent to his non-existence. From nothing, from a mere negation, no consequences can proceed. All effects are connected, by the law of causation, with some set of *positive* conditions; negative ones, it is true, being almost always required in addition. In other words, every fact or phenomenon which has a beginning invariably arises when some certain combination of positive facts exists, provided certain other positive facts do not exist. . . .

The cause, then, philosophically speaking, is the sum total of the conditions positive and negative taken together; the whole of the contingencies of every description, which being realised, the consequent invariably follows. The negative conditions, however, of any phenomenon, a special enumeration of which would generally be very prolix, may be all summed up under one head, namely, the absence of preventing or countervailing causes.<sup>161</sup>

In this passage, Mill draws two important distinctions, without clearly distinguishing them or clarifying the precise nature of the second distinction. The first distinction is between 'positive' conditions and 'negative' conditions; the second distinction is between a 'producing' or 'positive' cause and a 'non-producing' or 'negative' cause. There seems to be general agreement on the first distinction: a 'positive' condition is the presence of some act, event or entity in a particular situation; a 'negative' condition is the absence of some act, event or entity in a particular situation. There is less agreement on the existence and nature of the second distinction.<sup>162</sup> I consider the distinction to be as follows: a 'producing' or 'positive' cause is a NESS condition that is connected to the consequence at issue by a causal process in which each step in the process has a positive condition as its consequence; a 'negative' cause is a NESS condition that is connected to the consequence at issue by a causal process in which at least one of the steps in the process has a negative condition as its consequence.

Many philosophers believe that a negative condition cannot be a positive cause, but rather, at best, can only be a negative cause.<sup>163</sup> Some argue that negative conditions cannot be part of any plausible account of reality and thus cannot be any sort of cause. Moore is most insistent on this point. He notes, correctly, that there are no negative conditions in the sense of the negative opposite of a positive condition, for example non-tramplings by non-elephants. Rather, a negative condition must be understood to be the absence of some positive condition, rather than the 'ghostly' reality of its negative opposite.<sup>164</sup> Moore and others

<sup>160</sup> Mill (n 5) bk III ch V s 3.

<sup>161</sup> *ibid.*

<sup>162</sup> Jonathan Schaffer describes 'positive' causation as a 'physical connection' through transmission of some physical entity, structure or 'mark' between a cause and the consequence, without the involvement of any negative conditions, and 'negative causation' as counterfactual dependency of the consequence on the cause in the absence of any such physical connection. J Schaffer, 'Causes need not be Physically Connected to their Effects: The Case for Negative Causation' in Christopher Hitchcock (ed), *Contemporary Debates in Philosophy of Science* (Oxford, Blackwell, 2004) 197, 203–04, 214. Ned Hall makes a similar distinction between 'production' and 'dependence' as two different concepts or kinds of causation. His concept of 'production' focuses on the spatio-temporal contiguity and 'intrinsicness' (internal structure) of the causal process rather than physical transmission of some entity. Hall (n 14) 225–27, 253–54.

<sup>163</sup> eg Hall (n 14) 253, 260; Schaffer 162) 197–98; Thomson (n 1) 163 fn 12.

<sup>164</sup> eg Moore (n 1) 53–55, 399–400, 444–45, 460–61.

agree that propositions about the absence of some positive condition can be included as NESS conditions in laws. However, Moore notes, again correctly, that such propositions, being mere abstractions rather than aspects of reality, cannot be concrete *instantiations* of the abstract conditions in causal laws and thus cannot enter into causal relations as causes or effects.<sup>165</sup>

What Moore refuses to acknowledge is that the absence of some positive condition *is* an aspect of reality, a *fact* that makes the relevant proposition true or false,<sup>166</sup> that is as much a part of the real, existing state of affairs on a particular occasion as are the positive conditions in existence on that occasion.<sup>167</sup> Indeed, negative conditions often are positive or producing causes rather than negative causes, through the perception of the negative condition by a sentient being. For example, the absence of a salute by a soldier is a positive cause of an officer's perception of that absence and the consequent disciplining of the soldier, a baseball player's failure to touch a base is a positive cause of an umpire's perception of that failure and the consequent ruling that the player is out, the absence of a stop sign or signal is a positive cause of a motorist's perception of that absence and the motorist's consequent proceeding through the intersection with his foot pushing down on the accelerator, and the absence of a poison label on a container is a positive cause of a consumer's perception of that absence and consequent drinking, ingestion or handling of the contents of the container.<sup>168</sup>

Negative conditions also can be and often are effects. Indeed, a refusal to recognise negative conditions as effects makes it impossible to account for what is probably the most paradigmatic instance of an effect, to which Moore repeatedly adverts: death. Although Moore argues otherwise,<sup>169</sup> death as an event is a transition between a positive condition,

<sup>165</sup> *ibid* 303–04, 347–48, 351–53, 445, 461, 479. David Lewis agrees, but nevertheless treats absences as causes:

Absences are bogus entities. Yet the proposition that an absence occurs is not bogus. . . . And it is by way of just such propositions, and only by way of such propositions, that absences enter into patterns of counterfactual dependence. . . . Should we conclude, then, that when we say absences are causes, really it is true negative propositions that do the causing? – No; in other cases, we distinguish between the cause itself and the true proposition that describes it. . . . [T]he proposition is a necessary being, 'abstract' in one sense of that multifariously ambiguous term, and doesn't cause anything. . . . I refuse to concede that facts – true propositions – are literally causes. So I have to say that when an absence is a cause or an effect, there is strictly speaking nothing at all that is a cause or effect. Sometimes causation is not a relation, because a relation needs *relata* and sometimes the causal *relata* go missing.

Lewis (n 53) 100.

<sup>166</sup> I use 'fact' in the sense of a part of reality, a concrete property of a state of affairs, what Moore refers to as 'facta' to avoid confusing this sense with the different sense (that eg Ned Hall and David Lewis have in mind) of a true proposition about reality. See Hall (n 14) 254; Lewis (n 53) 100; Moore (n 1) 333, 341–47. It is not clear to me which sense Judith Thomson has in mind. See Thomson (n 1) 148, 150.

<sup>167</sup> Moore (n 1) 352. At one point (only), to preserve his criticism of the NESS account's recognition of omissions as causes, Moore acknowledges that abstract negative conditions can be instantiated:

When [NESS and other strong-sufficiency theorists] are asking after the truth makers for the negative conditions in laws, they are not looking for negative tokens of negative types. Rather, the truth-maker for negative conditions is the absence of any positive instances of some type. The law is "instantiated" in this sense whenever its negative conditions are made true by the world. In that sense, negative conditions can be 'instantiated', and so omissions will be causes.

*ibid* 479.

<sup>168</sup> Wright (n 13) 291; cf Collins, Hall and Paul, Introduction (n 9) 48 ('Billy's failure to show up for their lunch date causes Suzy to become disappointed'); Schaffer (n 162) 201 ('One can perceive black holes or any other black entity, which is merely an absence of radiated light energy'). The same cognitive processes, which are limited and often biased, are involved in the perception of positive as well as negative conditions. A good example is the well-known optical illusion in which one sees either an old hag or a young, beautiful woman when looking at the drawing or picture of the woman, but never both at the same time.

<sup>169</sup> eg Moore (n 1) 442 ('Dying is also a presence, even if it can be described as "not surviving", and surviving is an absence, even if it sounds like it is referring to some actual state of affairs'); see *ibid* 53–55, 303.

being alive (with a functioning heart or brain, depending on one's preferred definition) to a negative condition, the absence of life – which, unfortunately, for each of us is an ultimately certain real state of affairs. The relevant positive causal processes for the maintenance of life, at least as we know it, include as necessary positive conditions the presence of sufficient amounts of water, oxygen (for humans and other complex animals) and certain nutrients. The negative condition of an absence of the required amount of water, oxygen or nutrients, or of the blood that transports oxygen and nutrients to the brain and other parts of the body, is a negative cause of the negative condition of death (the absence of life).

As Jonathan Schaffer demonstrates, to deny that negative conditions participate in causation (generally but not always as negative causes or effects) is to blind oneself to the layers of the causal web and, more significantly, to deny that humans ever cause anything:

The pattern of negative causation features in even the most *paradigmatically causal* cases. Suppose that the sniper feels murderous, pulls the trigger, fires a bullet through the victim's heart, and the victim dies. Here is a paradigmatic causal sequence, *every step of which* is negative causation.

Working backwards, *surely* the firing of the bullet through the victim's heart causes the victim to die. But heart damage only causes death by negative causation: heart damage (*c*) causes an absence of oxygenated blood flow to the brain ( $\sim d$ ), which causes the cells to starve (*e*) [and die]. . . .

At the next step backwards, *surely* the pulling of the trigger causes the bullet to fire. But trigger pullings only cause bullet firings by negative causation: pulling the trigger (*c*) causes the removal of the sear from the spring ( $\sim d$ ), which causes the spring to uncoil, thereby compressing the gunpowder and causing an explosion, which causes the bullet to fire (*e*). . . .

At the third and final step backwards, *surely* the sniper's feeling murderous causes him to pull the trigger. But nerve signals only cause muscle contractions (such as that of the sniper's trigger finger) by negative causation: the firing of the nerve (*c*) causes a calcium cascade through the muscle fiber, which causes calcium-troponin binding, which causes the removal of [the inhibitor] tropomyosin from the binding sites on the actin ( $\sim d$ ), which causes myosin-actin binding, and thereby causes the actin to be pulled in and the muscle to contract (*e*). . . .

Since all voluntary human actions are due to muscle contractions, it therefore follows that *all voluntary human actions* (perhaps the most paradigmatic of all causes) involve negative causation.<sup>170</sup>

As Schaffer's example illustrates, acts and other positive conditions often are negative causes. Acts of shooting, stabbing, strangling, removal of water or food, etc cause the negative condition of the absence of life by causing the negative condition of the absence of one or more of the necessary conditions (water, oxygen, nutrients, blood etc) for the positive causal process of maintaining life. Acts as well as omissions also cause positive conditions through negative causation, by preventing a positive causal process that would have prevented the occurrence of the positive condition. For example, the act of removing a safety device or damaging it so that it no longer works results in the same negative state of affairs

<sup>170</sup> Schaffer (n 162) 199–200; see *ibid* 202 ('Biologists routinely invoke negative causation, such as in explaining diseases. What causes scurvy is an absence of vitamin D, what causes diabetes mellitus is an absence of insulin, and what causes dwarfism is an absence of growth hormone, and so on. The way in which HIV causes death is by disconnecting the immune system'). Schaffer notes that 'negative causation is supported by all the central conceptual connotations of causation, including counterfactual, statistical, agential, evidential, explanatory, and moral connotations'. *ibid* 202; see *ibid* 198–203; D Fair, 'Causation and the flow of energy' (1979) 14 *Erkenntnis* 219, 248 (noting that a shadow is an absence of light and that 'ice on the road caused the auto accident because the road failed to transmit its usual frictional force to the tires').

– the lack of a working safety device, which if present and working would have prevented some injury – that exists if there is no working safety device in the first place. The act of removing the top X feet from a dam results in the same negative state of affairs – the lack of adequate height of the dam, which if present would have prevented a flood – that exists if the dam initially lacked those X feet of height.<sup>171</sup>

Thus, the critical distinction for purposes of causal analysis is not the distinction between positive conditions (eg, acts) and negative conditions (eg, omissions), but rather between positive causation and negative causation. This distinction is critical because the analysis of each type of causation, although based on the same underlying (NESS) account of causation, differs owing to their differing focus. A negative condition, eg, being dead, is the absence of a positive condition, eg, being alive. Such absences exist owing to the lack of occurrence of the positive causal process(es) that would have produced the relevant positive conditions. Thus, while the analysis of positive causation focuses on the successful completion of the relevant positive causal process(es), the analysis of negative causation focuses on the failure of a positive causal process. To know that a positive causal process succeeded, we need to know that all of the necessary conditions in the antecedents of the relevant causal generalisations and their underlying causal laws were instantiated on the particular occasion. To know how one or more of them was instantiated, we need to go one or more levels deeper in the causal web. To know that a positive causal process failed, we need know that at least one of the necessary conditions in the antecedents of the relevant causal generalisations and their underlying causal laws was not instantiated. To know what caused its failure we need to know at what point it failed and go one or more levels deeper in the causal web to find out why it failed at that point.

As Mill noted, for any particular positive causal process, there are a multitude of possible preventing causes that could prevent its successful completion by preventing the instantiation of one of its necessary antecedent conditions. Mill's omnibus negative condition – the absence of any preventing cause – encompasses all the different possibilities, a listing of which is practically impossible.<sup>172</sup> If all the necessary conditions (which may include negative conditions)<sup>173</sup> for the positive causal process were fully specified, there perhaps would be no need to engage in any analysis of negative causation, since the instantiation of all of the fully specified necessary conditions would be inconsistent with the existence of any preventing cause. However, such a complete listing of all the necessary conditions is rarely if ever possible in practice. Mill's omnibus negative condition – the absence of any preventing cause – partially fills the gap, while also serving the useful purpose of emphasising the importance of always considering the possible existence of preventing causes.

<sup>171</sup> Wright (n 13) 291–92. Negative causation by acts or other positive conditions is often referred to as 'prevention' – simple 'prevention' when the consequence is a negative condition and 'double prevention' when the consequence is a positive condition that occurred because the act prevented the occurrence of a causal process that, if not prevented, would have prevented the occurrence of the consequence. See Hall (n 14) 241; Moore (n 1) 54, 62, 130–31, 303, 459–61.

<sup>172</sup> See text to n 161 above. Moore properly criticises me for some 'incautious' references to this omnibus negative condition when engaging in some specific causal analyses, while generously granting that I do not place much reliance on it. Moore (n 1) 492, 494. In each of the cited analyses, I relied instead on non-instantiation of a specific necessary condition in the positive causal process. See Wright (n 5) 1795; Wright, *Once More* (n 14) 1129–30; text to nn 88, 95–96 above.

<sup>173</sup> See text to n 168 above.

## I. Overdetermined Negative Causation

Philosophers, including those who reject counterfactual dependency analyses of positive causation, generally believe that counterfactual dependency analysis is required for situations involving negative causation.<sup>174</sup> Yet, as with overdetermined positive causation, counterfactual dependency (*sine qua non*, 'but for', 'made a difference') analysis will not properly resolve situations involving overdetermined negative causation.

Philosophers have discussed a 'pre-emptive pre-emption' example in which a ball is thrown towards a window, is caught by B before it reaches the window and breaks it, but would have been caught by C, who was standing behind B with her arm raised to catch the ball, if B had not caught it. Neither B's nor C's conduct is a necessary condition for ('made a difference' with respect to) the window's not being broken, since the conduct of the other person guaranteed the ball's being stopped before it reached and broke the window. Nevertheless, when people are asked who prevented the ball's reaching and breaking the window, they almost always say B did. However, if C is replaced by a brick wall that would have stopped the ball if B had not caught it, many people's first reaction is that B did not prevent the ball's reaching the window, presumably because the fact that it would never have reached the window anyway is much more obvious although no more certain than in the original hypothetical. Yet, if they are then asked to identify who or what did prevent the ball's reaching the window, people again usually choose B. The options 'neither B nor the wall' and 'both B and the wall' are quickly ruled out, and choosing the wall is implausible given that the ball never reached the wall. This leaves B as the only plausible answer.<sup>175</sup>

B is also the correct answer in both versions of the example. As in the similar examples of pre-emptive overdetermined positive causation, eg, the destruction by fire A of a house that would have been destroyed anyway by the subsequent arrival of fire B, refusing to treat B's catching the ball as the cause of the ball's not reaching the window or, worse, choosing C or the wall as a pre-emptive or duplicative cause, confuses strong necessity or lawful strong sufficiency (guaranteeing an outcome), respectively, with causal strong sufficiency (actually causing the outcome). Although C's backstopping B or the presence of the wall guaranteed that the ball would stop its forward motion before it reached the window, and thus prevented B's catching the ball from 'making a difference' in the ball's not reaching the window, neither condition was guaranteed to be the actual cause of the ball's stopping, and neither condition actually stopped the ball. Instead, B's catching the ball stopped it. C or the wall would have stopped the ball, but only at a later and further point, which the ball did

<sup>174</sup> eg Hall (n 14) 248–53; Lewis (n 45) 281–85; Schaffer (n 162) 197, 214. Schaffer assumes this even though, when criticising Phil Dowe, he makes use of the fact that the counterfactual-dependency analysis cannot properly resolve situations involving overdetermined negative causation. Schaffer (n 162) 212–13. Surprisingly, Schaffer ignores overdetermined positive as well as negative causation when he states that even positive causation requires counterfactual dependency. *ibid.* 214. David Armstrong follows Dowe in using counterfactual dependency to provide an account of negative causes and effects as 'parasitic' on positive causation, without however accepting counterfactual dependency as an analysis of causation. DM Armstrong, 'Going through the Open Door Again: Counterfactual versus Singularist Theories of Causation' in Collins, Hall and Paul (n 9) 445, 447–49. Even Moore, despite all of his criticisms of counterfactual dependency analysis, uses it as a 'non-causal' basis for attributing moral and legal responsibility to what I and others call negative causes. Moore (n 1) 144, 302–05, 353, 451–53, 458–60.

<sup>175</sup> M McDermott, 'Redundant Causation' (1995) 43 *British Journal for the Philosophy of Science* 523, 525; see Collins (n 69) 107; Lewis (n 53) 102–03; T Maudlin, 'Causation, Counterfactuals, and the Third Factor' in Collins, Hall and Paul (n 9) 419, 435–38.

not reach, in the ball's movement towards the window. All of this is true even if the wall or C was in place, guaranteeing the ball's failure to reach the window, prior to B's arrival on the scene.<sup>176</sup>

This example illustrates the critical difference in the proper method of analysing positive causation and negative causation when there is causal overdetermination. In situations involving positive causation, we need to determine whether each possibly applicable positive causal process was fully instantiated. Only those that were fully instantiated in each step of the process were causes; the rest were pre-empted. Since the focus is on complete instantiation of every step in the process, not much attention needs to be paid to the sequencing of the steps. However, when analysing overdetermined negative causation, it is critically important to focus on the sequencing of the steps in the positive causal process that failed, in order to determine at which step it failed. As courts generally correctly hold, the failure at that step pre-empted any potential failure at subsequent steps, the occurrence of which is dependent on successful completion of all the prior steps.<sup>177</sup> In the thrown ball example, the positive causal process that failed requires, among other necessary conditions, the ball's continuing to move at each point along its line of travel in the direction of the window with sufficient speed to reach the window. The failure of the ball to continue along this line at the point where B caught the ball pre-empted its potential failure at the subsequent point along the line where C or the wall was located, which it never reached.<sup>178</sup>

One of the most discussed examples of overdetermined negative causation in the legal literature is the *Saunders* case, in which a vehicular collision occurred when a motorist driving a rental car did not attempt to brake until it was too late to avoid the collision, but the brakes were defective owing to a lack of proper inspection and maintenance by the rental car company and therefore would not have stopped the car in time even if the driver had applied them earlier.<sup>179</sup> Assume that there were two defects in the braking system: the lack of a bolt connecting the brake pedal to the lever rod between it and the master cylinder and the lack of sufficient hydraulic fluid in the master cylinder. There is considerable disagreement whether the defects in the brakes (for which the rental company's lack of proper inspection and maintenance was a negative cause), the driver's failure to attempt to use the brakes, neither, or both was a cause of the accident.

I have argued that the driver's failure to attempt to use the brakes was a negative cause of the collision, which pre-empted the potential negative causal effect of the defects in the brakes. David Fischer rightly criticised my initial analysis for making conclusory statements without elaborating (or, admittedly, clearly seeing) the distinct methods of analysis required for negative causation (which involves the failure of a positive causal process) and positive

<sup>176</sup> See Wright (n 13) 298–300, 305; text to nn 84–96 above.

<sup>177</sup> See Wright (n 13) 302–05; Wright, *Once More* (n 14) 1123–31; text at nn 152 and following n 171 above.

<sup>178</sup> John Collins, confusing both guarantees and counterfactual dependency with causation, is 'very reluctant' to say that B's catching the ball prevented the ball from breaking the window in the wall version of the hypothetical: 'Given that the wall was there, the window was never in any danger of being broken. The presence of the wall really does seem to make [B's] catch irrelevant.' Collins (n 69) 108. To persuade others of his position, Collins offers a third version of the hypothetical in which the Earth's gravitational force replaces the wall and the window is replaced by a point one hundred million miles from the Earth. However, this third version is critically different. Unlike the first two versions, Collins is assuming that the ball lacked sufficient speed when it was released to reach the stated end point. The lack of sufficient speed when it was released caused the failure of the positive causal process of the ball's reaching that very distant point the instant the ball was released and thus pre-empted the potential negative causal effect on that process of B's subsequent catching of the ball.

<sup>179</sup> *Saunders System Birmingham Co v Adams* 117 So 72 (Alabama, 1928).

causation (which involves the successful completion of a positive causal process).<sup>180</sup> Fischer's criticism forced me to focus on and elaborate the distinction between these two types of causation and the distinct methods of analysis (both based on the NESS account) that are required for proper resolution of each, which I have restated above.<sup>181</sup>

The analysis of the failure of the braking-stops-car causal process is the same as in the thrown ball example. The braking process is a complex combination of a large number of more discrete causal processes, each of which is dependent for its occurrence on the occurrence of prior steps in the causal sequence. Some of the necessary events, in order of occurrence, are: (1) the driver's applying force to depress the brake pedal; (2) the depression of the brake pedal operating a lever to put pressure on the hydraulic brake fluid in the master cylinder; (3) the pressure in the brake fluid being transmitted through pipes and tubes to the brake cylinders; (4) the pressure in the brake cylinders pushing braking pads against the rotating brake drum or disc in the wheel assembly; and (5) the friction created by such contact slowing and stopping the rotation of the wheels. Each of these steps in the braking process, which occur in sequence, is itself a causal process; each has its own set of necessary antecedent conditions, mostly related to the structure and integrity of the mechanical, hydraulic and electrical components of the various parts of the braking system.

The failure of any step in the braking process prevents that process from progressing any further in the sequence of dependent events. It thus pre-empts the potential negative causal effect of any non-instantiated conditions in subsequent steps, which would have caused the braking process to fail if it had progressed that far. In *Saunders*, when the very first step in the braking process, the driver's depressing the brake pedal, does not occur, the braking process fails – actually never gets started – at that initial step in the causal sequence. The braking process does not get as far as step (2), although if it had got that far, it would then have failed owing to the missing bolt connecting the brake pedal to the lever, which in turn would have pre-empted the potential negative causal effect of the insufficient brake fluid in the master cylinder, which would have caused the braking process to fail at step (3) if it had progressed that far. But it never even got to step (1).

Duplicative as well as pre-emptive negative causation can occur. For example, if one mechanic put insufficient hydraulic brake fluid into the master cylinder for it to work and another failed to seal it properly so that whatever fluid was in it would leak out, their respective omissions, which negate required positive conditions for the occurrence of step (3) of the braking process, are duplicative negative causes of the failure of the braking system to work, owing to the non-occurrence of step (3) in the braking process, when the brake pedal is subsequently depressed and there is no other defect.<sup>182</sup>

Fischer continues to assert that my detailed analysis of the situation in *Saunders* can be used to reach a conclusion opposite to the one that I reach: that the lack of proper inspection and maintenance of the brakes pre-empted the subsequent failure of the driver to attempt to use the brakes. He initially argues that this is true 'because without good brakes an accident caused by a failure to stop became *inevitable* at the moment the car was given to the Driver'.<sup>183</sup> This argument, like John Collins' arguments regarding the thrown ball

<sup>180</sup> Fischer (n 118) 1357–59, criticising Wright (n 5) 1801.

<sup>181</sup> Wright (n 13) 302–07; Wright, *Once More* (n 14) 1128–31; text to nn 177–78 above. Allan Beever's criticism of my analysis of the *Saunders* situation fails to note my elaboration of the distinct nature of negative causation and the distinct method of analysis that is required when analysing overdetermined negative causation. See Beever (n 1) 423–25.

<sup>182</sup> Wright (n 13) 305–07.

<sup>183</sup> Fischer (n 1) 310 (emphasis added).

hypothetical,<sup>184</sup> once again confuses guaranteeing the occurrence of some consequence with actually causing that consequence.<sup>185</sup>

Fischer also argues that the existence of working brakes can be viewed as a step in the braking process that is prior to the driver's pressing on the brake pedal, in which case, using the method of analysis that I claim is necessary for negative causation (failure of a positive causal process), the lack of working brakes due to the lack of proper inspection and maintenance caused the failure of the braking process and pre-empted the potential negative causal effect of the driver's failure to timely use the brakes.<sup>186</sup> Stapleton reiterates and expands on this argument. Without describing my analysis, she asserts:

The only indication of how Wright arrives at [his] conclusion is his assertion that we 'must' look at the sequence of the causal process that did not take place.

Two obvious objections to Wright's analysis can be made. First, it is not at all clear why we 'must' look at this sequence. After all, in the actual world our two specified factors (the failure-to-repair and the failure-to-attempt-to-brake) did not occur in sequence; omissions simply do not 'occur in sequence'; here both persisted at the time of the actual phenomenon of interest, namely the collision; so notions of one omission pre-empting another omission are, without more explanation, incoherent. Secondly, Wright merely stipulates that the relevant sequence would have started with 'the driver's depressing the brake pedal.' Yet we could just as easily have stipulated that the first step in the braking-stops-car causal process was the brake repair: after all, 'delivery' of the motorist's foot on a workable brake pedal *is not needed* in the braking-stops-car causal process *until* the working brakes are in place.

Wright has no coherent rationale for choosing to stipulate the sequence in the way he does, and so, ironically, he stipulates *the exact opposite sequence* in a different example concerning the failure of a house-building project. Here he asserts that if there was a simultaneous failure to deliver concrete for the foundation and lumber for the framing of the house, the failure to deliver the concrete, which results in the failure of the house-building causal process at the foundation-building stage, preempts the potential negative causal effect of the failure to deliver the lumber, which *is not needed until* the subsequent framing stage, the occurrence of which depends on the prior occurrence of the foundation-building stage.<sup>187</sup>

Stapleton's first objection puzzles me. As I have previously explained and have reiterated here, we must look at the physical sequencing of the braking process because we want to know how it failed, and determining that requires determining at what step in that process it failed. The failure at that step pre-empted the potential failure of the process at some later step that the process never reached. Stapleton erroneously states that the two relevant omissions in *Saunders* did not occur in sequence. She seems to have in mind temporal sequence. If so, she is wrong: the failure properly to inspect and maintain the brakes occurred prior to the driver's failure to timely attempt to apply the brakes. However, as I noted in my discussion of the thrown ball hypothetical, the temporal order of occurrence of the negative conditions at issue is not the sequence we need to consider.<sup>188</sup> Instead, we need to consider the physical sequence of the steps in the braking process.

Fischer's and Stapleton's argument that we could and perhaps should view the braking process as starting with working brakes or their proper inspection and maintenance fails to pay attention to the structure of the relevant causal web. The defects in the braking system,

<sup>184</sup> See n 178 above.

<sup>185</sup> See text to nn 84–96 and 176 above and following n 188 below.

<sup>186</sup> Fischer (n 1) 310–11.

<sup>187</sup> Stapleton (n 1) 478, quoting Wright, *Once More* (n 14) 306 (emphasis by Stapleton).

<sup>188</sup> See text to n 176 above.

for which the lack of proper inspection and maintenance was a negative cause, are like the wall in the thrown ball example. Although the existence of the defects in the braking system occurred prior to the driver's failure to attempt to use the brakes and guaranteed the failure of the braking process, they did not actually cause the failure of the braking process. The defects in the brakes do not come into play in the braking process unless and until that process progresses to the steps, steps (2) and (3), at which those defects would actually cause the failure of the braking process. The braking process never reached those steps. Instead, it failed (never got started) owing to the driver's failure to (timely) use the brakes. The occurrence of steps (2) and (3) in the braking process is dependent on successful completion of each prior step in that process, including step (1), the driver's depression of the brake pedal. On the other hand, the occurrence of the driver's depression of the brake pedal (step (1) in the braking process) is not dependent on the prior occurrence of steps (2) and (3) nor on the rental company's prior proper inspection and maintenance of the brakes.

Stapleton's third claim, that I inconsistently specify the sequencing of steps in different causal processes, apparently confuses my discussion of the dependency of occurrence of some steps in a causal process on the prior occurrence of other steps with claims regarding the strong necessity of various conditions. It is she, rather than I, who (unsuccessfully) attempts to use artificially constructed 'duplicate necessity'<sup>189</sup> rather than causal strong sufficiency to identify causes. Perhaps her misinterpretation of my statements would have been avoided if I had employed 'used' rather than 'needed; when noting the step in the house construction process in which the presence of lumber becomes causally relevant.

Fischer also asserts that my analyses of causation in these and other situations are faulty because they fail to conform with many persons' intuitive 'causal' judgments, upon which he assumes I rely in all causally controversial situations.<sup>190</sup> However, I have never stated that the analysis of causation should conform to persons' intuitive 'causal' judgments in every case or even most cases. Indeed, I have often argued against taking persons' intuitive 'causal' judgments as reliable judgments regarding true (natural) causation, since such judgments often include normative or purposive factors in addition to the causation issue.<sup>191</sup> Instead, it is he and Stapleton who, while erroneously asserting that the NESS account privileges intuitive 'causal' judgments, continue to confuse intuitive judgments regarding liability with proper determinations of causation<sup>192</sup> and unfortunately have led others into similar confusion.<sup>193</sup> I have merely stated that, when attempting to determine the meaning of causation, including the proper senses of necessity and sufficiency, one should take into account our basic carefully considered intuitions regarding causation rather than policy

<sup>189</sup> See n 125 above.

<sup>190</sup> Fischer (n 1) 299, 312–16.

<sup>191</sup> See my articles cited in n 126 above.

<sup>192</sup> See Wright, *Once More* (n 14) 1120–23 and fn 172; text to nn 92–94, 122–23, 127–35 above.

<sup>193</sup> eg DF Partlett, 'Foreword: David Fischer, the Fox' (2008) 73 *Missouri Law Review* 281, 282–83, 286–87. Partlett and others have been led astray not only by Fischer's confusion of causation with liability judgments, but also by his careless and misleading use of causal terminology, some of which unfortunately has been employed in the Restatement Third. See Wright, *Legal Responsibility* (n 9) 1449 and fn 81, 1464 and fn 146; Wright, *Once More* (n 14) 1126. Fischer's misuse of causal terminology is particularly striking with his term, 'dependently sufficient cause', which he defines as an omission that 'is insufficient to be a 'but for' cause of the result because the other omitted act was necessary for sufficiency'. Fischer (n 1) 279. This is a convoluted and highly misleading way of referring to a lack of strong necessity, which he misdescribes as a lack of 'independent sufficiency' and misapplies to situations like *Saunders*, in which each omission was not a 'but for' cause of but was 'independently sufficient' (in the lawful guarantee sense that Fischer assumes) for the failure of the braking process and the consequent collision. See *ibid* 278–79. Stapleton uses without explanation a similarly unhelpful and misleading term, 'dependent double omissions', to refer to the omissions at issue in situations like *Saunders*. Stapleton (n 1) 477–78.

considerations,<sup>194</sup> while also insisting that a theoretical account of causation is necessary to back up these intuitions and to prevent them from leading us astray:

Despite the lack of an explicit comprehensive definition of causation, people from time immemorial have shown remarkable agreement in their causal judgments, at least once they are clearly focused on the causal issue rather than on some noncausal inquiry regarding *the* (most significant for some purpose) cause. In particular, judges and juries, when not confined by incorrect tests or formulas, consistently have demonstrated an ability to make intuitively plausible factual causal determinations.

Some scholars rely heavily on this shared yet undefined concept of causation in their writings on causation and responsibility by grounding their arguments on intuitive responses to hypothetical situations. Yet intuitions that are not conjoined with theory in a search for underlying principles are often inadequate for the hard cases and sometimes may mislead even in the easy cases. In these situations in particular we would benefit greatly from elaboration of the concept that, unarticulated and imperfectly understood, underlies the intuitive judgments.<sup>195</sup>

I continue to believe that the NESS account provides the needed comprehensively applicable account of the concept of causation.

## J. The Proliferation of Causes

As some critics have pointed out, the NESS account greatly increases the proliferation of causes.<sup>196</sup> The NESS account, like the *sine qua non* account, recognises acts and omissions as causes through negative as well as positive causation, which dramatically increases the number of causes. Moreover, the NESS account goes beyond the *sine qua non* account by recognising as causes not only strongly necessary conditions, but also independently strongly sufficient conditions and conditions that were neither strongly necessary nor independently strongly sufficient.

Even the *sine qua non* account is sometimes rejected by judges and others for treating as causes conditions that usually would not be identified as causes in ordinary speech but rather, if thought about at all, would be treated as ‘background conditions’ or as too remote in the causal web to even be acknowledged as background conditions. However, as I noted above,<sup>197</sup> this merely reflects a confusion of the causal issue with contextual salience, which in the law is appropriately handled by focusing the causal analysis solely on legally relevant conditions and by applying normative attributable responsibility limitations on the scope or extent of liability for the consequences of those conditions. Depending on the circumstances and purpose of the particular causal enquiry, something not ordinarily treated in common speech as a cause would easily be described as such – eg, oxygen as a necessary condition for a fire in circumstances where oxygen was not expected to be present.<sup>198</sup>

As most critics of the NESS account acknowledge, the proliferation of causes is not a significant problem in analyses of legal responsibility.<sup>199</sup> In law, as well as ordinary life, we

<sup>194</sup> Wright (n 3) 1020.

<sup>195</sup> *ibid* 1018–19.

<sup>196</sup> Collins, Hall and Paul, Introduction (n 9) 25; Fischer (n 1) 290–91; Fumerton and Kress (n 1) 98–99; Moore (n 1) 477–79, 486–95.

<sup>197</sup> See text to nn 121–35 above.

<sup>198</sup> See Hart and Honoré (n 5) 34–35; Wright (n 3) 1012–14.

<sup>199</sup> Fischer (n 1) 289–90, 292; Fumerton and Kress (n 1) 87, 99; Stapleton (n 1) 440, 444, 448–51; Thomson (n 1) 150 fn 9; see Honoré (n 1) 367–69.

are not interested in determining all of the practically innumerable immediate and remote causes of every event or state of affairs. In law, we are only interested in the possible causes of legally recognised injuries, and we are interested in only a very few of those possible causes: the aspect of the defendant's conduct that made the defendant subject to potential liability, the negligent aspect (if any) of the plaintiff's conduct (which may result in application of the defence of contributory negligence), and highly unexpected intervening necessary conditions or independently lawfully sufficient non-responsible conditions (which generally will result in denials of legal responsibility – misleadingly described as 'proximate' or 'legal' causation – despite tortious causation).<sup>200</sup> Legal responsibility may also be denied for legally relevant conditions that made only a 'trivial' contribution to a legally recognised injury<sup>201</sup> or that caused a legally recognised injury that was not the result of the actual or anticipated realisation of a risk that made the relevant party's conduct wrongful.<sup>202</sup> Moreover, failures to act to prevent a legally recognised injury generally are not considered to be wrongful (and thus legally relevant), or are considered wrongful only in very limited circumstances, if the person who failed to act had no responsibility for any positive condition in the positive causal process that produced the injury (eg, the no- or limited-duty rules for 'nonfeasance').

#### IV. CONCLUSION

While I do not claim to have addressed every possible objection to the NESS account, I have attempted to address all those of which I am aware. My consideration of the various objections has reinforced my belief that the NESS account is not merely a very useful tool for identifying singular instances of causation, which almost all of the critics of the NESS account admit, but that it does so precisely because it captures the essence of causation and gives it a comprehensive specification and meaning. I don't think the former is possible in the absence of the latter.

<sup>200</sup> Wright (n 5) 1741–44, 1759–74, 1798–1801; Wright, *Legal Responsibility* (n 9) 1434–78.

<sup>201</sup> See text to n 123 above.

<sup>202</sup> Wright, *Legal Responsibility* (n 9) 1479–1528.