



Indeterminacy and impotence

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Abstract

Recent work in applied ethics has advanced a raft of arguments regarding individual responsibilities to address collective challenges like climate change or the welfare and environmental impacts of meat production. Frequently, such arguments suggest that individual actors have a responsibility to be more conscientious with their consumption decisions, that they can and should harness the power of the market to bring about a desired outcome. A common response to these arguments, and a challenge in particular to act-consequentialist reasoning, is that it “makes no difference” if one takes conscious consumption action or not – that one is “causally impotent” to change an outcome. In this paper, I break causal impotence objections into three distinct lines of argument and present causal indeterminacy as a third, unexplored variation of much more common causal impotence lines. I suggest that the causal indeterminacy argument presents additional challenges to consequentialist moral theory because it acknowledges that individual actions can have an impact on outcome, but suggests instead that the outcome can neither be known nor secured by the action itself.

Keywords Causal impotence · Indeterminacy · Inefficacy · Consequentialism · Climate Change · Vegetarian

1 Introduction

Consider for a moment the general class of causal impotence objections. Consider this class to contain any argument that aims to show that an individual action is incapable of bringing about an intended outcome. Proposals to reduce the use of plastic

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straws or wooden chopsticks, to cut back on one's fossil fuel consumption, to install solar panels on one's home, to assume a vegetarian diet, all function according to aggregationist logic that understands a negative or positive outcome as the aggregate effect of many people -- often billions of people -- acting independently without regard for the collective good. In their most common deployment, causal impotence objections serve as responses to proposals that if one can effect change by preventing the production of some collective bad, or by contributing ever so marginally to the production of some collective good, then one should abstain from or take the action in question. Often these kinds of arguments are tied to market logic, so they tend to appear in cases in which we would like to promote some good, or prevent some bad, by encouraging more responsible consumer behavior (Bartley et al., 2015).

Causal impotence objections needn't be directed at collective outcomes, of course, as circumstances can easily be imagined in which, say, an individual is powerless to bring about a desired outcome, such as with crosswalk buttons that are unconnected to traffic lights and instead serve as a psychological palliative to massage the breathless impatience of pedestrians. For the purposes of this article, however, I am mostly concerned with the class of causal impotence objections that revolve around individual actions and their marginal contribution to a greater collective good or bad, and in particular, I am concerned with conscious consumerist arguments that turn on an individual's contribution to the support of a good or a bad product.¹

In this way, causal impotence objections *reject* the consequentialist rationale for taking action by suggesting (usually for some specific, but often weakly articulated, reason) that marginal contributions to a good or bad outcome do not move the moral needle one way or the other. To an extent, causal impotence objections pose complications for deontological systems as well, though this is considerably more controversial (Galvin & Harris, 2014; Michaelson, 2016b; Shafer-Landau, 1994). On their face, these objections appear all to follow a similar line of reasoning, but I submit in what follows that they actually come in several subspecies, and that the mechanism by which they function matters substantially to their resolution.

So far as I see it, causal impotence objections can fruitfully be broken down into at least three broad subspecies. I'll call these lines of argument respectively: causal inefficacy arguments, causal overdetermination arguments, and finally, causal indeterminacy arguments. Each subspecies of argument is subject to its own lines of refutation, or counterarguments, so it will be important as we move forward to carefully delineate each.

Notably, causal impotence objections travel under other titles as well: Arguments from Inconsequentialism, Causal Inefficacy Arguments, The Objection from Impracticality, The No-Difference Challenge, sometimes with slightly differing contours,

¹ It is important here that I am referring to collective outcomes and not to individual outcomes. One referee has concerns that the indeterminacy objection applies to any action at all, suggesting that if indeterminacy for collective outcomes is true, then it implies that all moral theory must be called into question. I want to avoid this implication. If one says something like, "We cannot reliably predict the fluctuations of the stock market on the basis of individual purchasing decisions," this does not necessarily amount to a full-throated rejection of a commitment to anticipating what individual people will do in response to direct person-to-person actions. Generally claims of this sort -- about the stock market or economic markets more broadly -- are uncontroversial and do not threaten to undermine normative ethical theory.

but I think the class of arguments to which these titles refer, and the lines of argument contained therein, are sufficiently tangled that it makes sense to break them apart. Because the primary objective of this article is to spell out the nuances of the third subspecies, the indeterminacy argument, I will only dedicate a small portion of the opening sections to the first two subspecies, and dedicate considerably more time and energy to the discussion of indeterminacy.

2 The causal inefficacy argument

The first subspecies of causal impotence objection is familiar, and perhaps the most common line in the class of impotence objections. It turns on the claim that the aggregate effects of any individual action are too minute to be felt or noticed. In an ocean of actors, a single drop of good or bad won't change the outcome in a way that justifies the action. Sinnott-Armstrong (2005) offers this sort of causal impotence objection in his famous "It's not my fault" article, but it is echoed, dissected, and discussed by numerous others (Broome, 2012b; Hiller, 2011; Kingston & Sinnott-Armstrong, 2018; Michaelson, 2016a). Taking a leisure drive on a Sunday afternoon won't affect the climate outcome in a morally significant way, suggests Sinnott-Armstrong. In this respect, the causal inefficacy argument poses a difficult challenge to consequentialist arguments that apportion responsibility according to contribution.

The logic behind this objection is straightforward and is partly a consequence of the model invoked when characterizing the underlying problem. For instance, climate change is widely modeled as a global aggregate phenomenon – a consequence of accumulating greenhouse gases in the atmosphere. The model in this case is that of a closed aggregative system, in which each individual emitter causes some harm proportionate with their emissions. This is, of course, the correct physical account of how emissions are related to global mean temperature. Some ethicists and many public commentators have divvied up responsibilities according to straightforward shares of harm (Broome, 2012a; Nolt, 2011). Others avoid the assignment of responsibility and simply start from the assumption that reducing each person's emissions will contribute to overall mitigation efforts. The resulting thought then is that if enough people engage in some action, or if enough people refrain from some action, then their actions taken in aggregate will have big effects. If we want to mitigate climate change, then one clear way to do this is to encourage many individual people to emit less.

Inefficacy arguments² are thereby built around the magnitude of these individual harms, where the basic idea is either that the effects of any individual's actions are too negligible to have an impact on the outcome or the goods are so lumpy as to absorb the damages. Given that any single greenhouse gas contribution is infinitesimally, insignificantly small, no single emission will have much of an impact on temperature.

² It makes sense to call these sorts of objections "causal inefficacy" arguments, since their primary emphasis is on the magnitude of the effect. It is notable, I think, that some authors have sought to characterize *all* causal impotence objections as matters of inefficacy, preferring, presumably, to avoid the somewhat salacious nature of the term "impotence." But I think the following analysis will show that the mechanism by which the impotence claims operate makes a difference to what kind of reply we deem successful.

If I take a leisure drive on a Sunday afternoon, my contribution to the global carbon budget will be so miniscule as not to make a difference. In this way, the causal inefficacy argument is focused on the insignificance of effects, rather than on the suggestion that there is no effect at all (Glover & Scott-Taggart, 1975; Nefsky, 2017).

A similar kind of thinking goes into arguments for and against meat consumption, where animal welfare advocates argue that since every steak or hamburger a person consumes originated on a cow, that therefore reducing the number of steaks or hamburgers consumed will likewise result in a reduction in the numbers of cows raised for slaughter (Singer, 1980). As before, operating in the background here is the inefficacy objection -- a sort of “death by a thousand cuts” approach to responsibility -- where many people contribute in aggregate to a harm, but the magnitude of any individual’s contribution to that harm is so small as to be causally and morally insignificant. The idea that “it makes no difference” if one alters one’s diet or becomes a vegetarian is tempting and prevalent (Nefsky, 2017).

There are fairly familiar responses to this line of reasoning. First, there is a rule-oriented counterargument. If everyone were to go for leisure drives on Sunday afternoons, not to mention gas guzzling adventures whenever it suits them, then carbon emissions would rise dramatically. The suggestion here is that the aggregation of effects, when abided by as a general rule, yield a consequence that cannot be tolerated. This reply harnesses rule consequentialist reasoning to reject causal inefficacy arguments.

Second, some objections revisit actual utility generated by actions and instead seek to recast actual utility in terms of expected utility (Feldman, 2006; Matheny, 2002).³ So the question then becomes whether the expected value of one’s actions yields a net positive effect (Broome, 2012a; Hiller, 2011; Kagan, 2011; Norcross, 2004; Singer, 1980). Leisure drives are harder to justify on these grounds than, say, necessity drives, and so they fall into the category of things that we ought not to engage in. If, say, the expected value suggests that there is a 51% chance that one will increase overall utility in the world, where there is a 49% chance that overall utility will be reduced by an amount of comparable magnitude, expected utility pushes us in the direction of taking the action.

A third kind of counterargument relies not on the imperceptible impact of any given action, but suggests that there may be a “tipping point” that, when crossed, sends the climate or the system in a new direction to reach a new equilibrium state. Concern over unstable ecosystems and tipping points stems from work in resilience ecology pioneered by Holling (1973), but has many adherents in the conservation, climate, and population community. Typically these counterarguments manifest in response to overdetermination arguments (addressed briefly below as the “threshold counterargument”), but when lodged in response to inefficacy arguments they imply that the next unit of carbon emitted or beef consumed is not insignificant in any respect, and since it is unknown which unit is responsible for tipping the system over into this new state, it should be assumed that all units are efficacious and their impact morally significant.

³ Feldman has a slightly different notion in mind when he invokes the Objection from Impracticality, a bit more practical and epistemic in nature, but I think it sufficiently overlapping enough to warrant citing here.

A fourth kind of counterargument speaks against causal inefficacy arguments for dirty hands reasons. Driver (2015) attacks the inefficacy challenge by arguing that one ought not to be complicit in the production of suffering. Even some consequentialist treatments of individual action lapse at times into concerns about complicity in bringing about bad ends (Nolt, 2011). I have no space to address this line of reasoning, though I think that it too is challenged considerably by the concerns about indeterminacy that I articulate below.

Much of this discussion is well-trodden and there is little sense in rehearsing its contours and counterreplies here. Our efforts to interrogate the impotence problem will be more effective if we move to the next category.

3 The causal overdetermination argument

Other authors challenge consequentialist arguments for collective action on overdetermination grounds, focusing not on the magnitude of the effect, but on the assuredness of the outcome. Cases of overdetermination are addressed with some care in the literature and classically include toy examples like firing squads (Killoren & Williams, 2013; Stewart, 2012), where we might have five shooters and one victim, or broken windows (Bernstein, 2016b; Lewis, 2000), with two or more rock throwers. It only takes one bullet to kill the victim, or one rock to break a window, so any single actor who might refrain from action will have no effect on the eventual outcome. Essentially, the unnecessary actors are just adding insult to injury.

Elizabeth Cripps' work on collective action for climate change, Christian Barry and Gerhard Øverland's work on individual responsibility and emissions, my own arguments about the inevitability of climate outcomes, along with plenty of other more theoretical work (Barry & Øverland, 2015; Cripps, 2013; Funkhouser, 2002; Gunnemyr, 2019; Hale, 2011; Budolfson, 2021), seem to operate along these lines. It is probably no accident that Martin Bunzl's early research initially took up problems of overdetermination as well, but has shifted in recent years to uncertainty and risk in collective problems like climate change (Bunzl, 2014). Shelly Kagan (2011) covers related problems in the context of meat consumption, where Mark Budolfson responds to these concerns by pointing to the complexity of markets. Budolfson portrays many meat production systems as long, complicated chains. Upon reflection, I think my earlier arguments regarding the inevitability of outcomes, and to my eye Budolfson's arguments as well, are more aptly understood as indeterminacy objections, rather than objections of overdetermination, but I will cover those particular lines in the next few sections.

The general upshot of the overdetermination argument is not that individual emissions or meat purchases are too small to be felt, but rather that climate and animal outcomes are overdetermined: that given the number of actors causing greenhouse gas emissions or animal suffering, there is little that can be done to change the outcome. The harm, as it were, is already "locked in."

As with inefficacy arguments, there are several natural responses. In his earlier work, Martin Bunzl argued simply that there don't seem to be any authentic cases of overdetermination (Bunzl, 1979). So this is at least one response: that proper cases

of overdetermination are not prevalent. Jonathan Schaffer disagrees, suggesting that cases of overdetermination are everywhere (Schaffer, 2003).

A second common response turns on thresholds. The so-called “threshold counterargument” aims to suggest that overdetermination is not as problematic for act consequentialists as some would have you believe. Though it may be true that there are buffers built into collective arrangements as Budolfson suggests, for any given quantity of meat, thresholds will eventually be crossed (Chartier, 2006). At some point, another cow will be raised and slaughtered. This kind of reply depends again on aggregative models of harm and effectively suggests that harms, though overdetermined in some contexts, are nevertheless characterized by discrete breaking points.

The weaknesses of the threshold argument become more apparent when one asks whether overdetermination is the proper analog for a global collective problem like climate change. It is not clear, for instance, that the climate system is the sort of thing that can be “broken” in the classic sense. It may either degrade slowly, with every additional emission, or it may shift abruptly, like a boulder that begins rolling downhill. Much depends on which mental model one invokes in characterizing climate change.

These threshold arguments are additionally complicated by concerns that there may be only one critical threshold and not staged thresholds. In the climate literature, for instance, the climate system is frequently compared to a bathtub with a very slow drain (Guy et al., 2013; Sterman & Sweeney, 2007; Sweeney & Sterman, 2000). On this view, the bathtub is at risk of overflowing, though some of the carbon that enters the atmosphere will naturally precipitate out. Carbon continues to accumulate, triggering a tipping point where the accumulated carbon spills over the rim. This makes the threshold responses much more complicated, as every additional atom of carbon contributes an infinitesimally small amount toward this eventual threshold, though there is only one threshold to be reached. If in fact the tipping point is overdetermined, then additional carbon contributions will make no difference.

Looking closely at the causal inefficacy and causal overdetermination arguments discussed above, both arguments suggest that an outcome is *determined* no matter the action that any given agent takes, thus the agent has little causal relationship to the eventuation of that outcome. For the causal inefficacy argument, the idea is that any action by an agent is too small to be felt, and so therefore the agent has only a causally trivial effect on the outcome, so much as to be insignificant. For causal overdetermination cases, the idea is that the outcome is determined by the confluence of other actions, so no matter the action taken, the outcome will result. The causal indeterminacy argument however, which I shall cover next, rejects the idea that the outcome is pre-determined independently of the agent. Indeed, the actor plays a morally significant role in bringing about the eventual outcome. What is denied, instead, is the idea that the outcome will take a particular shape. Hence the terminology: the outcome is indeterminate.

4 The causal indeterminacy argument

I want to introduce here yet a third sort of causal impotence objection and one that is not well-represented in the literature. This third causal impotence objection relates to the causal pathways associated with the eventual achievement of an outcome and turns attention to the existence of intervening agents positioned to interrupt or divert these pathways in response to the initial actions of the agent.

Causal indeterminacy occurs when one or more intervening agents actively interferes with or thwarts another agent's actions. Generally, such actions are oriented toward achieving a specific outcome, such that the outcome cannot be anticipated with certainty but is nevertheless dependent upon the actions of the initiating agent for that outcome to arise. More often than not, causal indeterminacy arguments are deployed in response to a large subset of individual/collective responsibility arrangements in which economic markets (or other complex institutions) play a central role.

Where with determinate outcomes the causal pathway between an initiating action and the eventuating outcome can be anticipated with some level of certainty – an actor flips a light switch and a light goes on – in indeterminate systems, the causal pathway between the initiating action and the eventuating outcome can be drawn only retrospectively. We know, for instance, that in a determinate system like adding marbles to a jar, if we add enough marbles to a jar, the jar will eventually overflow with marbles. We do not know, by contrast, that in an indeterminate system like purchasing marbles from a toy store, whether we will increase or decrease the number of marbles available in toy stores. This is because our purchase of marbles has multiple spillover effects and is confounded by many (conceivably billions of) intervening agents, who respond to our purchase with their own strategies aimed to achieve their respective ends.

The political theorist Russell Hardin (2003) has written extensively on indeterminacy and contends that it is one of the most overlooked features, “constantly swept under the rug,” (pp 1) of contemporary political theory. He does not, naturally, insist that it is a new problem. Indeed, he suggests that it is one of the central conundrums of political theory, singling out Thomas Hobbes, Jeremy Bentham, Ronald Coase, and John Rawls in particular as theorists who have offered important, albeit unsatisfactory, responses to the problem of indeterminacy. Despite this treatment in philosophy, I am inclined to agree with Hardin that, as a problem, indeterminacy is largely underappreciated, underexplored, and misunderstood.

Indeterminacy of the sort that concerns Hardin is so pervasive that it bridges into numerous other bodies of literature as well. It makes sense to spend a moment reviewing how various discussions of uncertainty tiptoe around the problem of indeterminacy without actually addressing it head on. In many practical contexts, the topic of indeterminacy appears somewhat cryptically, as authors struggle to make sense of the peculiarities and uncertainties associated with global collective action problems, essentially invoking the problems of indeterminacy but failing to label them as such.

Richard Lazarus, for instance, coined the term “wicked problem” to describe many public policy challenges. He has characterized climate change as a “super-wicked problem,” suggesting that climate change is not just complicated, but that it's super-complicated (Lazarus, 2009). While super-wicked problems do appear with some

currency in the policy literature, they're often invoked without explanation or exploration, and most commentators have done little work to tease out what makes wicked problems truly wicked. Rittel & Webber (1973) offer up ten attributes of wicked problems -- e.g. they don't have a definitive formulation, they don't clearly admit of true or false conclusions, there is no way to test their solutions, they are all unique -- but almost all of them avoid getting into the matter of indeterminate outcomes.

The sociologist of science Brian Wynne, in another body of literature, addresses indeterminacy within the context of uncertainty in environmental learning (Shackley & Wynne, 1996; Wynne, 1992). He does invoke the term 'indeterminacy' to contrast it with uncertainty, but his concerns are primarily associated with climate communication in a science policy context, not so much with the ethical implications of indeterminacy.

More directly regarding climate ethics, Gardiner (2006) seems sensitive to concerns of indeterminacy in his widely-read Perfect Moral Storm article, though he never actually uses the term 'indeterminacy' to describe this phenomenon. Likewise, in my earlier piece on causal impotence I appealed to the Hotelling rule of non-renewable resource economics to argue that "consequentially derived conservation principles...are self-undermining and subject to crippling causal and rational impotence objections" (Hale, 2011). The Hotelling rule suggests in part that where a resource is exhaustible, economic pressures related to extraction will encourage suppliers of the resource to optimize extraction and conserve efficiently (Devarajan & Fisher, 1981; Hotelling, 1931). While this is a considerable oversimplification of Hotelling's work, which mostly introduces the element of time into the economics of exhaustible resources (Gaudet, 2007), my paraphrase is hopefully illustrative. If producers observe that their exhaustible resource may dry up, they will take steps to maximize profits before exhaustion occurs. What I failed to do in that earlier article, but what I am hoping to do here, is clarify the nature of this causal impotence. In a more recent essay, I introduced the idea of indeterminacy by arguing that these sorts of scenarios apply to renewable resources as well; that they afflict many market relations (Hale, 2020).

Of course, game theory has been dealing with mixed-strategy equilibria since at least as long as John von Neumann and Oskar Morgenstern (1953); and the complicated nature of games depends largely on whether the arrangements are best understood as cooperative, symmetric, zero-sum, sequential, combinatorial, and so on. But more recent work has begun to call attention to indeterminacy *qua* indeterminacy in moral and political contexts. Cristina Bicchieri covers several recent attempts to address indeterminacy in game theory, including specifically shifts to evolutionary models (2009). Yanis Varoufakis, philosopher and Greek Minister of Finance, has analyzed indeterminacy in economic markets (2013). Sara Bernstein has also taken up indeterminacy in the context of causation, and specifically with regard to individual responsibility, though not so much with regard to the causal impotence objection (2016a).

Given the voluminous writing in this area, not to mention the considerable attention given to uncertainty and wicked problems in other branches of applied inquiry, it is somewhat surprising that indeterminacy has not been better explored in the context of causal impotence.

5 What is indeterminacy?

According to Hardin, indeterminacy cases are exemplified by the confluence of complex social arrangements and the presence of intervening agents who act strategically. In other words: complexity and strategy. So first, let us illustrate with a simple example involving one actor and one intervening agent.

If I move a saltshaker from the counter to the table against the wishes of my wife; my wife may then, frustrated with my actions, move the saltshaker from the table back to the counter. My simple act of moving the saltshaker will in this respect have been ineffective, as I will have moved the saltshaker, bringing about an outcome that I was hoping to achieve, only to be thwarted by my wife, who has returned the shaker to its original location.

This particular illustration is not a case involving indeterminacy, except insofar as it is iterative and unclear what outcome will eventuate. Both my wife and I make discrete moves to alter the location of the saltshaker. One of us succeeds, the other fails. However, the presence of my wife in this model, an intervening agent, illustrates at least that my moving of the saltshaker does not necessarily result in the outcome that the saltshaker will end up where I want it to be. More distressingly, my wife's reversal of my action isn't always straightforward. One day she may put the saltshaker in my clothes dresser. Another day she may replace the salt with sugar. Knowing her well, I may have some preconceived ideas about what she will do, and in fact may approach my strategy of moving the saltshaker based on how I think she will reply, but I can never really know what her response will be, and she has, in the past, surprised me. My objective of moving the saltshaker may result in myriad outcomes that I do not intend or foresee.

Obviously, this is a simple case in which an intervening agent reverses the action that I've taken in direct fashion. More than anything, this reflects the relationship I have with my wife: it's really just a playful exchange. I know, however, by virtue of knowing how my wife feels about the location of the saltshaker, that my intent to move it will likely be ineffective. Though my wife and I cooperate in most regards, we have a disagreement about the best location for the saltshaker.

What this silly case reveals about intervening agents, more importantly, is that they are sometimes creative in their responses to us. Anticipating an outcome too indirectly connected with an initiating action is a mistake. If I think that my action to move the saltshaker will bring about the desired state of affairs – that is, the *actual* relocation of the saltshaker – I am just miscalculating.

But consider a more complicated arrangement: a game of chess. Again, this is a relatively simple and constrained case involving two players, 32 pieces, 64 squares and, all things considered, relatively few rules.

At the beginning of play, the very first move of chess for white there are 20 possible first moves -- some better than others -- and the responses for black expand mathematically from there. If I move a pawn forward one square to advance toward the other side of the board, and if I am playing correctly and honestly, I do so primarily for the purpose of winning the game. When I move my pawn, my opponent seeks to thwart my objectives and parries with a move that changes the configuration on the board. The movement of my pawn does not bring about the state of the board that

I had imagined just a few moves before, nor does it necessarily produce the outcome that I aim to produce.

If I am a very good chess player, I may be in a position to anticipate several future states of the board. I may force a capture, or in rarer circumstances, I may place the player in a circumstance such that there is only one move available. I am uninterested in cases such as these. They are helpful for improving one's chess game, but do not adequately characterize the indeterminacy of the chess game. Much of the challenge of chess involves trying to figure out how an opponent will respond to each move; even though the game is not determined by any given move.

This is true across the spectrum of excellence in chess. Even very good Grandmasters can only anticipate so many moves into the future. It has been suggested that Garry Kasparov or Magnus Carlsen or some of the other greats calculate ten moves into the game; and for practical purposes, most chess engines are set to calculate 18 moves into the future, but even with all this horsepower, no system can anticipate what the eventuating outcome will be. Indeed, there are full tournaments between chess engines of identical power – as in the World Computer Chess Championship (WCCC) -- and these engines routinely change their moves to try to outwit the opposing engine.

The so-called Shannon Number, named after mathematician Claude Shannon, suggests that even for relatively short games of only ten moves, there are upwards of 69 trillion possible games (Shannon, 1950). Correcting for sensible moves and assuming that for any given position there are an average of only three sensible moves, suggests that an average game of 80 moves will have upwards of 10^{40} combinations.

Chess, again, is a game involving only two players, 32 pieces, 64 squares, and relatively few rules. In this respect, it is nowhere near as complicated as, say, a game involving three or more players; or an iterated game. It is not as complicated as the stock market, a major league baseball season, global emissions scenarios, commodities auctions, international shipping routes, geopolitical turmoil, health insurance provision, or even your high school social scene. As the number of strategic intervening actors grows, and as the complexity of options available to each actor increases, the outcome of any given action within that network of actors becomes all the more indeterminate.

The upshot of this observation is not that we are never in a position to anticipate what the future will hold – indeed, we have all sorts of shortcuts that help us with this endeavor across the entire spectrum of options, as is hopefully illustrated by the playful and ongoing exchange I have with my wife over our saltshaker. The upshot, rather, is that whatever outcome eventuates from an action in which there is a long chain of intervening actions or intervening actors, that outcome can *neither* be determined nor known until a prior action has been taken.⁴ In this way, the actor both plays

⁴ As I mention in an earlier footnote, one worry here may be that I am claiming that one can never know the outcome of one's actions if one is interacting with another person. In a very trivial sense this may be true, but we have channels through which to steer outcomes between small (and sometimes large) parties of interacting agents. Namely, we can coordinate through communication, essentially bringing agents and actors into sync with the same objectives. When coordination through this channel fails, however – that is, when intervening agents are uncooperative -- it becomes increasingly difficult to achieve a desired outcome by acting alone. In a more globalized context involving the uncoordinated activity of multiple

a critical causal role in the bringing about of the outcome, as the outcome is one of many possible consequences of the action, but also no normative role in guiding the intended outcome to actualization. Whatever outcome eventuates is largely dependent on the subsequent actions of all other participants to the event, as well as any subsequent actions taken by the actor.

Returning then briefly to the causal inefficacy and causal overdetermination lines of argument, both suggest that an outcome is *determined* no matter the actions that any given agent takes, thus the agent has little causal relationship to the eventuation of that outcome. For causal inefficacy cases, the idea is that any action by an agent is too small to be felt, and so therefore the agent has only a causally trivial effect on the outcome, so much as to be insignificant. For causal overdetermination cases, the idea is that the outcome is determined by the confluence of other actions, so no matter the action taken, the outcome will result. For cases of causal indeterminacy, however, there is a rejection of the idea that the outcome is pre-determined independently of the agent. Indeed, the actor plays a morally significant role in bringing about the outcome. What is denied, instead, is the idea that the outcome is determined. Hence the terminology: the outcome is indeterminate. This is a critical move, because it acknowledges the significance and consequential impact of even very small actions, but it raises questions about what kind of causal pathway can be drawn. It may help, however, to look at a more concrete case to see how model indeterminacy factors into ethical decision making and imposes a vexing causal impotence objection.

6 Meat, markets, and models

Consider now a renewable commodity like non-human animal meat, which has been isolated as a source of concern both for animal welfare reasons – raising animals for their meat is widely argued to cause undue suffering – and for environmental reasons – raising animals for their meat is widely argued to cause unnecessary environmental damage. For our purposes, it is also maybe one of the most studied and debated topics intersecting with markets, morals, and causal indeterminacy. I aim to spell out below not only the way in which markets are indeterminate, but also how this indeterminacy can be complicated by political and social factors.

Suppose that your motivation as an actor is to reduce your impact on the environment by reducing the overall amount of beef consumed (and therefore produced). One very common assertion is that if you as an individual consumer reduce your consumption of meat, or entirely cease to purchase meat, this will have an impact, however miniscule, on the market. If enough people refrain from purchasing meat, goes the reasoning, then the miniscule impacts will add up (Kagan, 2011; Norcross, 2004; Singer, 1980).

millions of actors and intervening agents, as with the economic market, it is precisely this situation that we commonly face. Note, as well, that these kinds of cases are quite different than cases involving, say, a marching band or an army platoon, where all players or soldiers are working together to achieve a collective outcome.

The standard view as I am construing it, therefore, is that one should become a vegetarian because it will prevent suffering and prevent environmental destruction by reducing animal production. The reasoning here, however, is critical. The purpose of becoming a vegetarian is to prevent non-human animal suffering/prevent environmental damage, and the mechanism is through a proxy for suffering and environmental damage, meat, which also serves as a proxy for non-human animal production. Meat is a proxy and not a direct reflection of animal suffering/environmental damage because there are a range of practices in animal agriculture which may be more or less harmful or damaging.

Grant for the sake of this argument, however, that meat production is bad, either for the animals or for the environment. We can forgo the much more complicated discussion about welfare or environmental impacts. Assuming this, vegetarianism seems to follow directly from Singer's famous edict that "if we think that if something very bad is happening, and if it is in our power to sacrifice something of lesser moral importance to stop that very bad thing from happening, then we should do so" (Singer, 1972). There is little to quibble with here and many readers of Singer's work make the connections that he intends them to make.

But the "if it is in our power" aspect of his claim is a bold assumption – difficult to apply in systems where indeterminacy is in play, as in the marketplace or at a restaurant. Immediately when we start tracing out an individual's power to change outcomes through purchasing decisions, new factors come into play, smuggling in assumptions that all too frequently go unchallenged. One set of assumptions that goes unchallenged is that the laws of supply and demand accurately and straightforwardly capture the relationship between supplier and consumer, specifically with regard to a given commodity. Another set of assumptions, and this is perhaps more critical to the argument of this paper, is that commodities markets are properly understood as closed determinate systems, and that the relationship between producer and consumer is either direct, or direct *enough*, that we can draw a causal pathway between the consumer's action and the very bad outcome we are trying to prevent.

The two assumptions are related but deeply flawed, and both are saddled with different kinds of indeterminacies.

On the first set of assumptions: supply and demand curves are inaptly understood as straightforward reflections of the relationship between consumer and supplier. Rather, supply and demand curves reflect complicated aggregate and composite preferences, specifically with regard to stipulated willingness to buy or sell across a spectrum of prices and other goods. Though supply and demand can be broken down into marginal units of stipulated preferences, and frequently are understood in precisely this way, this shorthand is an extreme simplification made primarily for pedagogical purposes. In any given transaction, there is no single, independent supply or demand curve. Rather, there are many supply and demand curves that characterize the sundry, overlapping relationships making up any supply chain. When aggregate consumption of burgers goes down, this only may or may not mean that demand for beef goes down, since burgers and beef are nested properties, complicated by composite properties – like taste, quality, cut, culture, and so on – that are dependent on a range of further interwoven factors. A more targeted question in response to downward shifts in demand might instead ask what the demand for the alleged supply reflects. Ground

beef? Meat? Protein? Inexpensive food? Bad tasting food? Inhumanely raised meat? Some of these? All of these? None of these? The answers to these questions are a complicated, challenging puzzle – partly empirical, but also semantically indeterminate (Field, 1974) -- that no agricultural economist, environmental psychologist, not to mention moral philosopher, can claim to have cracked.

On the second set of assumptions: demand shifts in meat at the supermarket or in restaurants kick off a long chain of production responses, affecting nothing so straightforward or direct as meat supply (Budolfson, 2019; McMullen & Halteman, 2019). Though consumption of beef at one store may go down, and consequently the price for select cuts of beef at that store may follow shortly thereafter, such shifts in consumption and price do not necessarily mean that fewer cattle will be raised or that they will sell for less at the feedlot. A shift in consumption and price may be picked up by producers of cattle feed, but also by producers of chicken, pork, corn, wheat, soy, cheese, leather, and a long interconnected and overlapping chain of other commodities on the market. When these shifts occur, investors change their investment strategies, insurers change their insurance strategies, advertisers change their advertising strategies, all of which scrambles the numbers in the non-human animal lottery. These knock-on effects push market actors to make adjustments that keep them in business, preventing even close observers of these markets from knowing what will come next. Evidence of this indeterminacy is exhibited in the commodities markets themselves, where expert investors place what are widely considered to be “highly risky” bets on future gains and losses.

In turn, the results of shifts in consumption patterns may well cause unanticipated and irreconcilable contradictions for the well-intentioned actor, or for different subsets of well-intentioned actors taking actions for different reasons. Where the animal welfarist aims to reduce the amount of misery in the world, the environmentalist aims to reduce the amount of damage to the environment. Cutting back on overall beef demand only possibly will inspire a producer to provide the outcome that either actor aims for. A cost-cutting reduction in creature comforts may *increase* the suffering of animals while it also *reduces* the environmental impact. If a rancher chooses to reduce the quality of feedstock or to increase the number of cattle held on a feedlot, this outcome works at cross-purposes with the presumed objective of reducing demand. In fact, concentrated animal feeding operations – which are highly efficient and morally problematic factories for raising animals as meat – gain comparative strength against the backdrop of reduced meat demand and lower prices. They increase the misery for animals while also decreasing the impact on the environment, which is largely a consequence of the clumsy relationship between the actor and the sought-after reduction when run through an indeterminate system like the market. Depending on what the actor is seeking to do, whether aiming to reduce misery or reduce environmental devastation, that actor easily can be undermining her own objectives. Meat is just a proxy for the desired outcome, and a poor one at that.

Though recently there have been some fairly sophisticated criticisms of consequentialist justifications for vegetarianism (Budolfson, 2012, 2015, 2019; Chignell, 2015; Nefsky, 2018; Warfield, 2015), many in the ethics literature nevertheless continue to argue that consequentialist moral reasoning still applies despite the causal indeterminacy objections rooted in market logic (McMullen & Halteman, 2019;

Nefsky, 2019). Excellent though the commentaries in this area are, they frequently neglect to properly understand the nature of the impotence that characterizes these markets, framing them as more traditional inefficacy or overdetermination objections. The impotence of indeterminacy, again, stems not from having no effect on the outcome, as clearly it is the case that actions taken in market contexts have demonstrable effects on outcomes. The impotence, rather, stems from being unable to manage that outcome in a way that accords with what the actor anticipates or aims to achieve, precisely because there are so many intervening actors who act in ways that thwart that outcome from coming to pass.

Setting aside complications engendered by the assumptions of economic models, there is additional reason to worry that responses from other intervening actors span the political and social realm as well. Quite a few actions that suppliers and consumers might take in response to shifts in demand – essentially of a non-economic, psychological or social nature – are additionally poised to derail the objectives of the abstainer (Sparkman & Attari, 2020). *Moral distraction*, for instance, is one way in which an actor might be derailed from achieving an outcome. If a bunch of individual actors think that they are contributing ever so slightly to a better world by reducing their consumption of fossil fuels, then they may be less inclined to support a more effective solution. They may, alternatively, engage in the practice of *moral licensing*, giving themselves permission to take consumptive and arguably destructive practices in one sector in their lives because they are good actors in another sector of their lives (Merritt et al., 2010). The vegetarian, feeling good about her decision to eat less meat, may decide that she is entitled to take one more plane flight. Other consumers may, differently still, engage in a kind of self-indulgent *virtue signaling*, either believing themselves to act as private one-person ads for or against a given act, both boosting their own feelings of self-importance or the importance of like-minded actors, and disparaging those who behave otherwise (Levy, 2020). Such actions may induce not only feelings of moral divisiveness, but a genuine epistemic *backfire effect*, in which those who feel disparaged begin inadvertently to disregard factual evidence or testimony that contradicts beliefs they hold about the world (Nyhan & Reifler, 2010). *Buck passing* encourages us to think that we are doing what we can as individuals where others are either failing to take action or are responsible for the world's calamities. And so on. Many of these responses have the appearance of being primarily psychological in nature – irrational distractions from more strategic and rational behavior – but there is no reason why derailing cases need be limited to individual psychology. Social dynamics introduce derailing pressures too. Indeed, sometimes coordinated responses to conscious consumerist campaigns emerge from motivated collectives. Industry groups may promote paleo diets, political actors may respond to a boycott by calling for all like-minded political thinkers to respond with a boycott of the same company, some particular artist may raise the ire of one group but ignite a purchasing campaign from another group to show support to that artist, and so on.

We repeatedly see derailing cases in the practical realm that are subject to these forces. Cutting back on rainforest hardwoods may or may not alter the rate at which rainforest hardwoods are cut, partly for economic reasons and partly for political reasons. Maybe there will be fewer to sell, but also maybe their price will go down and ranchers will be able to buy land more easily to graze cattle. Shifting from a

meat-based diet to a vegetable diet may increase demand for quinoa, thus depriving Peruvian natives of a crop that they have subsisted on for centuries. Biofuels may cause rapid increases in demand for food products, taking up cropland and creating new political lobbies. There are plenty of studies showing both effects, but to really establish the causal impact of these various forces, such phenomena can only be studied after the fact, retrospectively, and the modelling has to be just right.

The critical point then is that though demand has real impacts on supply, producers nevertheless remain strategic actors. They will respond to market conditions – shifts in demand, supply, price, or even weather reports -- by seeking rents. Facing a simple downward trend in demand, they have a range of strategic options available to them. They may reduce their labor force, cut corners, ramp up the speed of production, pursue political leverage, consolidate their efforts, kill off smallholders, among a multitude of other possible responses. It is far from a sure thing that these efforts will have the desired effect of reducing the number of animals raised for meat. In fact, given complex supply chains and the many intervening actors in those chains, it is entirely conceivable that the targeted supply – which in this case might either be the supply of misery or the supply of environmental damage – will conceivably be elevated.

7 Objections and replies

There are several common replies to claims of indeterminacy in contexts such as those that I have raised here. These replies sometimes look like full-throated rejections of the very idea of indeterminacy, but upon examination reveal themselves to be somewhat weaker than they appear. Unfortunately there is no space in this paper to cover them in depth.

7.1 The uncertainty objection and a reply

A first worry might be that characterizing collective action problems in terms of indeterminacy does little more than put a fancy spin on the problem of uncertainty. In this respect, the idea is that indeterminacy is mostly an *epistemological* worry: we can't know what the future holds. James Lenman covers some of this territory in his work on consequentialism and cluelessness (Lenman, 2000). But I hope to have shown above that indeterminacy is more than a mere epistemological worry. It is a practical worry as well. What's at issue here is what will happen, and since there is no way to say (know, predict, anticipate) what will happen because the outcome is undetermined, we cannot expect that our thinking on these cases is clear. The chess example aims to illustrate this: that once even a single strategic opponent is introduced, even comparatively simple arrangements give rise to an expansive array of differing outcomes.

There is a somewhat more semantic worry that rejects the above argument on grounds that the term 'uncertainty' as commonly employed covers cases of considerable complexity whereas the term 'indeterminacy' is more aptly applied to cases of vagueness. This concern places too much faith in the existing uncertainty literature and too narrow a focus on indeterminacy as vagueness. But the difference between

uncertainty and indeterminacy is substantial. Consider as an alternative case a marble drop. If a bucket of marbles drops on the floor and sends marbles scattering across the room, there is considerable uncertainty and randomness about where those marbles will land. Given basic details of the known system, however, their eventual configuration can be anticipated with greater or lesser scientific confidence. This, I think, closely characterizes uncertainty as it is typically captured in the literature. There is uncertainty – details we cannot know – about how the marbles will collide.

Consider instead a marble drop in which there are hundreds of strategically-motivated, marble-hoarding hermit crabs. Assume that these hermit crabs are wise to the latest, greatest physics models. Where will the marbles end up? That is a key question. Assuming that the hermit crabs are wise to the latest science, any predictions about the eventual arrangement of the marbles in the first system will be known to the crabs and they will, as effective marble-hoarders, take pains to rearrange the marbles so that they do not end up in the same place that was anticipated by the models. Even if one assumes that these two cases are just different aspects of uncertainty – one driven by physical uncertainty and the other driven by social uncertainty -- one must admit that there is enough of a difference that a categorically different set of analytical tools will be required. The point is obviously not to assert the plausibility of marble-hoarding hermit crabs, but to suggest that when millions of strategic actors have access to information about the system in which they take part, they are empowered to thwart the interventions of those who seek to interfere with them. This may not be a problem for anticipating some eventual possible arrangement of marbles, but it is a problem for knowing how any given intervention will affect the outcome.

Recent experiences with COVID interventions may be instructive here. Certainly there are epidemiological facts that help researchers make sense of the trajectory of SARS-CoV-2 as it moves through a population of hosts, even accepting fairly dynamic activity on the part of those hosts. There are well-accepted uncertainties regarding the virology, epidemiology, and demography of the host population that complicate those models, often factored in as modelled pathways. All things considered, the COVID models are fairly good, albeit not great, at anticipating how the virus will wax and wane. What COVID models have not been able to do, however, is anticipate how any given population will respond to policy or medical interventions. Vaccines, mask mandates, curfews, lockdowns, recommendations from authorities and experts – all of these interventions act in sometimes surprising ways, which in turn shifts the behavior of the people who are responding to the interventions and confounds the models. Moreover, basic epidemiological details about the proliferation and perfusion of the virus influence regional and individual responses which in turn serve as countervailing pressures on the models themselves. When a population catches word that illness is on the rise or on the decline, strategic actors acting within that population change their behavior in response to that pressure, not always smartly. In order to assess how a population will respond, which pressures will do the right kind of work, we need much more information about that population and we need to engage with (e.g. communicate with) members of that population directly. (The difference here, and I think it is worth noting this, is that COVID interventions are generally much more coordinated than the individualized market interventions and consumer boycotts of the sort under consideration in this paper.)

7.2 The stochasticity objection and a reply

A related reply rests on the idea that indeterminacy describes a state of affairs that is only overly complex, much like models in fluid dynamics, geomorphology, atomic physics, or the nutritional sciences. But this reply doesn't appreciate the important difference between *stochastic* systems and indeterminate systems. Though indeterminate systems may resemble stochastic or probabilistic systems, the critical difference lies in the many forking paths of strategy. In theory at least, a sophisticated supercomputer, given perfect information and a well-built model, would be able to correct for stochasticity or probability, or to anticipate outcomes. Given enough information, one would think, the world's greatest scientists would reveal that what appears to be stochasticity and randomness is little more than a limitation in knowledge. But indeterminate systems are self-undermining in a way that more determinate systems are not. Namely, because the strategies of all intervening actors must be factored in, anticipatory models must be factored into subsequent strategies as well, thus making projected outcomes moot the moment that they are projected. In other words, unlike systems in which stochasticity or probability complicates but does not rule out anticipation of future outcomes, the very existence of a model that anticipates a future outcome *itself* becomes a factor in the strategizing of intervening agents. If meat producers anticipate that some subset of actors will strategize against them, they will revise their strategy to take account of this new information. The central concern here for the ethicist is that present actions will shift the world in a way that makes it worse, even if those actions are anticipated to make them better.

7.3 The economic theory objection and a reply

Still others may suggest that indeterminacy flies in the face of well-established *microeconomic principles*, like the so-called Laws of Supply and Demand. These laws are indeed taught in all economics classes as some of the most robust and inviolable, foundational to the study of economics. Decreases in demand place downward pressure on price and supply, whereas increases in demand place upward pressure on price and supply. But indeterminacy does not, in fact, militate against these rules, except insofar as it understands them properly (Cartwright, 2014; Hausman, 1988, 1989). It is a common but unfortunate mistake to neglect the *ceteris paribus* assumption implicit in the laws of supply and demand, in all supply-demand curves. If we hold fixed all component parts of an economy – which is to say, all of the actions of all other actors who might play a role in this system, and all of the other possible responses from suppliers – then the hypothesized demand pressure will place pressure on supply and price. To stick with the laws is just to ignore the indeterminate nature of those arrangements and insist that they are determinate. If something changes, however, which is almost guaranteed to happen in complicated markets that encourage strategy as the *modus operandi* of all actors, the pressure can dissipate through innumerable channels. When it does, it dissipates in unanticipated directions.

One might object that, in the absence of positive evidence contradicting what economic theory anticipates, it makes sense to defer to the *ceteris paribus* assumptions of the theory as a reasonable guide to what the future holds. This is, of course, true,

and perhaps the primary function of the economic laws in question: to understand how various shifts in economic conditions place pressure on, say, supply, demand, or price. But these alleged laws mostly isolate those pressures to help analysts and economists make sense of what might be happening. They do not and cannot translate directly into outcomes and, as a consequence of this, they are routinely misapplied in the normative ethical discourse. They cannot, in other words, answer the question of how other strategic actors will respond to individual consumption pressures and thus ought not to be construed as effective levers to steer the market and the supply or production of any given good.

7.4 The positive economics objection and a reply

A related thought might be that whether the quantity of animals or quantity of oil produced will increase or decrease is not a theoretical claim, but rather an *empirical* one: that the indeterminacy discussed above is but a matter of getting observations and the science correct. But this too is complicated by the *ex post facto* nature of indeterminate outcomes. Indeterminate systems produce results that are observable, much like chess matches can be scrutinized after the fact, but that are not strictly-speaking anticipatable. The difference here turns on the observation that empirical claims about indeterminate systems are fundamentally retrospective. One cannot observe what has not yet happened, and one cannot generalize about what will happen because those generalizations themselves will be factored into the next round of actions. Eventually there will be a fact-of-the matter about how the future unfolds, but depending on a range of factors, including what preventive steps other intervening actors take to subvert or assist the outcome of others. In this way, indeterminate systems produce empirical “fact of the world” outcomes, but not outcomes that have the capacity to be anticipated or understood. Of course it is true that there is plenty of evidence about how firms and industries respond to various real-world pressures – say, for instance, in response to consumer boycotts -- but this evidence cuts in many directions and often yields conflicting conclusions. Indeed, the verdict is very much out on the efficacy of consumer boycotts (Delacote & San Paolo, 2006; Koku et al., 1997; Tyran & Engelmann, 2005). This is largely thanks to the range of responses available to industries and firms and the back-and-forth adjustments that individuals and firms make in response to one another.

7.5 The discrete actions objection and a reply

Some simply object that indeterminacy arguments factor in too much. As an actor, I can only take one action at a time, so I am required to evaluate that action at the time that I take it. Just as a chess player might need to make a determination about the best move in the middle of a game, or just as I might look at a single move of the saltshaker, so too might any given actor need to evaluate their action on the best available information. In this respect, the reply seeks to isolate *discrete actions* from iterated actions. The problem is that indeterminacy reveals this sort of approach to action to be impossible. Any chess grandmaster will observe that there are, notably, many terrible moves in chess, but no clear best move independent of the existing

configuration of the board. The move Bishop to g5 makes no sense unless we know everything else about the existing layout. Certainly, there is no clear move that can withstand scrutiny as *the* move that must be played in all games all the time. It is only after a game has been played that the evaluation of the strength of any given move can be offered definitively; and only upon assessment of the existing configuration of the board that the board can be evaluated for best moves in the first place.

7.6 The strategy objection and a reply

Still others reply by suggesting that indeterminacy poses no new problems or complications to more standard interpretations of causal impotence. They suggest that standard responses to those forms of impotence – expected value, thresholds, risk assessment -- can be invoked for cases of indeterminacy by adopting a sophisticated *strategy*. They suggest that what's at issue here is not a matter of whether any given action will be efficacious, but which of the various approaches to reducing meat consumption or carbon emissions will work. Should we encourage vegetarianism or refrain from taking leisure drives as a general strategy? Just as a chess player might adopt strategies to attack the center and castle early, these strategies can be applied to other circumstances, like vegetarianism or climate mitigation.

Alas, such strategies are sure to fail given a skilled opponent. Just as there is no best single move in chess, so too is there no single best strategy or opening in chess. Even extremely strong openings – the Queen's Gambit, the Najdorf Sicilian, the Caro Kahn – fall to well-equipped players. So too with strong opening principles – control the center, develop pieces early, knights before bishops – reveal themselves in aggregate, over multiple iterations, to yield outcomes that are only slightly better (52% win-48% loss, very often) for the player against an equally matched opponent. Indeed, overapplication of theories such as these is an invitation to opponents to exploit the principles as weaknesses. In many indeterminate contexts, particularly contexts with multiple market actors who are better positioned than individual consumers, one can expect the win-loss ratio to be worse for the disorganized actor.

7.7 The quietism objection and a reply

Some may find the above impotence objections frustrating insofar as they seem to imply that there is nothing to be done to avoid devastating outcomes. But Stephen Cullberg rightly points out that many of these impotence objections aren't so much aimed to encourage *quietism*, but rather are rooted in a general appeal to institutionalism over individual action (Cullberg, 1999). Indeed, this seems to be what motivates many of the authors mentioned above. Obviously, indeterminacy concerns are associated with institutional actions as well. As I mention above, recent responses to institutional actions during the COVID pandemic, for instance -- lockdowns, mask mandates, vaccine cards -- illustrate that even some of our most robust epidemiological models sometimes fail to anticipate the responses of large segments of the population to institutional interventions, and that these responses increase or decrease in reactivity depending on the institutional actions that are taken. Though some blowback was anticipated before the pandemic, expert opinion was divided on how great a

threat the public's reaction might pose to successful intervention. Nevertheless, there is no reason to limit collective action to institutions, as non-state actors can work outside of conventional systems to offer coordinated responses, and there is at least some reason to believe that a well-coordinated response will still fare better at achieving desired outcomes than the more haphazard response that is demanded by conscious consumerist efforts (Brownstein et al., 2021; Hale, 2020; Maniates, 2001 #1942).

Additionally, it is worth noting in response to the quietism objection that there are likely still plenty of non-consequentialist reasons to attend to one's consumption behavior. For instance, one may choose to forgo meat because they hold that it sullies one's character, or because they hold that it is one's duty to respect animals. Neither of these two positions are affected by the indeterminacy objection I outline above, so the quietism objection is not quite as forceful as it may first appear.

7.8 The "cuts both ways" objection and a reply

A final concern might simply be a misunderstanding. Some reply by asking whether the conclusion of this argument then means that if we want to reduce or restrict production of some good then that we should purchase more of it? That would seem like a *contradiction*. But the indeterminacy line of argument doesn't imply this either. Rather, it suggests that outcomes are indeterminate. Not only can one not know what the outcome from any given action will be, but one can also not draw a clear causal pathway from the act of consumption (whether increasing consumption or decreasing consumption) to the supply, the price, the production, or the rents accrued. In the case of animal welfare, the supply of misery may increase. In the case of environmental concern, the supply of environmental damage may decrease, in part because meat is an imperfect proxy for these other moral concerns. This is a consequence of the failure to coordinate: because multiple actors acting strategically, without communication and coordination, are likely to produce outcomes that diverge considerably from the intent of any given strategic actor. Rather, what must be acknowledged is that one well could be making the world worse by taking even very well-intentioned actions.

8 Conclusions

Causal inefficacy objections of the first sort seem to fall victim to the problem that they can always be overridden by some kind of aggregate (frequently uncoordinated) action of the multitudes. Add enough marbles to the jar and eventually the jar will be full of marbles. Overdetermination objections seem again to be subject to a similar kind of aggregationist logic: that there is some threshold condition that if not met will not cause the ill effects. Again, this will not do. There is sufficient empirical evidence to suggest that overdetermination is not as prevalent as it might appear, and decent reason to believe that threshold arguments succeed in cases where overdetermination accurately describes the scenario. Causal indeterminacy objections, however, have dramatically different implications, suggesting that many collective action problems, by virtue of the complexity and strategy constitutive of the systems in which they are a part, cannot easily be resolved through direct means.

The primary purpose of this paper was to call attention to causal indeterminacy as an undeveloped problem in ethics and to situate that discussion particularly in the context of causal impotence. Importantly, the indeterminacy argument does not insist that individual actors will have no significant effect – so in this respect, causal indeterminacy allegations are not that one only plays a small role in an outcome – nor does it insist that the undesired outcome will happen regardless of what one does – so indeterminacy allegations related to certain outcomes – rather, the argument insists that the outcome can neither be known by the actor nor achieved by the action.

The implications of the above argument thereby have both an epistemic and a practical dimension. On the epistemic front the outcome cannot be known until the action is taken or the game is played. One can make guesses as to the outcome of a game of chess, or a consumption decision at the market, but one cannot know how others will respond to any pursuant actions. On the practical front, the outcome and the pathway to get to the outcome will not be determined until the game is played and the actions have been taken. Again: one can make guesses about what will happen, maybe even very smart guesses that are informed by years of study and research, but the ultimate layout of a chess board, and the ultimate configuration of a market, will not be set until actions have been taken... and intervening actors will persistently be taking actions to undercut, or at least respond to, the actions that the initiating actor takes.

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