

Hangover cures and principles of sufficient reason

J.R.G.Williams
jrgw@st-and.ac.uk

Draft: comments welcome!
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Abstract

It has been suggested recently that there are ways of using supertasks to avoid hangovers that would otherwise result from drinking. In order to argue that hangovers are completely averted, however, a *principle of sufficient reason* (for hangovers) needs to be assumed: that every hangover is caused by an episode of drinking. I argue that, in general, such principles of sufficient reason are highly problematic in the context of supertasks: they conflict with the most plausible diagnosis of ‘Benardete’ situations. The conclusion, for better or worse, is that even supertasks do not guarantee consequence-free drinking.

Parsons’ patented palliative

Josh Parsons (2004) argues that supertasks could enable us to avoid the consequences of our reckless actions. I will argue that Parsons’ assumptions are not sustainable.

For Parsons, drinking happens at an instant. Drinking a given amount of beer induces a period of drunkenness in strict proportion to the amount of liquid consumed; immediately followed by a hangover lasting exactly the same amount of time. But, for Parsons, hangovers can be masked by periods of drunkenness (the hair of the dog). He supposes that drinking any amount of beer suffices to render one pain-free during the relevant period of drunkenness.

Parsons’ suggested cure is this. Sip down half your pint at 11pm. By Parsons’ lights, this will give you half an hour’s drunkenness, followed by half an hour of hangover. At 11.30pm, just before the hangover kicks in, take another sip, to mask the effect. Drinking one quarter of a pint at this point will give you another quarter of an hour’s remission—at the cost of scheduling a second hangover for the time between 11.45 and 12. This masking effect will wear off at 11.45, but at this time, we can sip down another eighth of a pint, getting relief until 11.52.30. Repeat the pattern: each time the hangover becomes due, drink half of the remaining beer in the glass, to mask the hangover for half the time remaining.

After infinitely many sips, it will be 12 o’clock, and you will have finished your pint. Looking over the whole period from 11 to 12, every period of hangover that has been incurred will have been masked by some beer-sipping. You will have experienced no hangovers by 12.¹

Parsons claims that after 12 o’clock we will be hangover-free, having been drunk for the whole preceding hour. On the face of it, this is a gratuitous conclusion to draw. We have described only the time before 12, and you’ve been doing all sorts of funny things to your system during that time. How can we be certain that you won’t be hungover after 12? Parsons recognizes that something more is needed: he stipulates that “a hangover can only be caused by drinking” (p.365). Since all the hangovers that might result from drinking episodes have been dealt with, he concludes that you will be pain-free even after your bout of drinking has finished.

¹We will suppose that hangovers at point-instants cannot be experienced.

Thomson's lamp

The Thomson lamp scenario, for present purposes, is as follows. There is a lamp with a toggle switch, taking the lamp from off to on and vice versa. You hit the toggle switch at $12 - 1/2^n$ hrs, for each n (i.e. at 11.30, 11.45, 11.52.30...). For n even, the lamp is toggled on; for n odd, the lamp is toggled off. What state is the lamp in at 12?

The difficulty is that the state of the lamp does not converge to a single value as the time tends to 12. Rather, it alternates between two states—on and off—faster and faster. So there is no limiting state of affairs which the lamp approaches as 12 draws nearer. It is problematic, therefore, to read off from our description what state the lamp will be in after 12.

The sensible way to think of the example is that the description of the situation leaves it indeterminate what state the lamp is in at 12 (Benacerraf, 1962, cf.). The Thompson lamp case leads not to contradiction (as Thomson (1954) thought), but to singularity. Parsons concurs with this diagnosis (p.365).

There are well known ways of redressing this failure of predictive power. Suppose, in describing the case, we stipulate:

LAMP-1

The lamp cannot be on unless it is directly caused to be on by someone toggling the switch on, or by its initial manufacture.

where for a switch-toggling episode at t to *directly cause* some state of the lamp at t' , it must not be 'cancelled' by someone toggling the lamp back off again in the time between t and t' . In the context of LAMP-1, it follows from the description of the Thomson lamp scenario that, all else equal, the lamp will be off at 12. Every switch-toggling that might directly cause the lamp to be on has been cancelled, in the relevant sense, and by LAMP-1, the lamp can only be on if some uncanceled switch-toggling caused it to be on.

It is crucial that we do not try to impose a symmetrical principle governing the situations in which the lamp can be off. Suppose we were to add:

LAMP-2

The lamp cannot be off unless it were directly caused to be off by someone toggling the switch, or by its initial manufacture

Given this, we could argue, in a way that exactly parallels the above, that the lamp must be off at 12. The conjunction of the two principles thus leads to the prediction that the lamp must be both on and off at 12 o'clock—a contradiction.

Principles of sufficient reason

I call theses such as LAMP-1 and LAMP-2 'principles of sufficient reason'. Clearly, principles of sufficient reason must be handled with care, in the context of supertasks. Endorsing them indiscriminately will produce contradictions. But if we endorse only one of a pair of symmetrical principles, we will, it seems, avoid contradictions, and may gain the ability to predict the results of relevant supertasks. This was the case for the Thomson lamp scenario. If we endorse LAMP-1 without LAMP-2, we are able to infer that the lamp must be off after 12.

I shall now argue that even single principles of sufficient reason such as LAMP-1 are unsustainable. In combination with supertasks, they give predicative power. But this power will misfire, leading to unacceptable results.

Consider a supertasker who forms the following set of conditional intentions. Let I_t be the conditional intention to switch the lamp on at t , just in case the lamp has never yet been switched on. Let the supertasker adopt on such conditional intention for each time t in the set $\{11 + 1/2^n\}_{n \in \mathbb{N}} = \{12.00, 11.30, 11.15, 11.07.30 \dots\}$. Furthermore, the supertasker is 'resolute' in that she will only act in such circumstances, and 'lonely', in that she and the lamp are alone

in the universe, so no external factors will interfere. Suppose furthermore that the lamp has been off since its manufacture just before 11 o'clock. It follows from this description that the lamp is on at some stage. But the resolute supertasker did not switch it on.

It must be on at some stage. Suppose otherwise—that the lamp is never on. It follows that the antecedent of each of the supertasker's conditional intentions is met. In particular, the antecedent of I_t is met, for some particular t . Since the supertasker is resolute, she will implement her intention, and switch the lamp on. So it will be on after t , contradicting our assumption. Therefore, the lamp is on at some stage.

Though the lamp is on at some stage, the resolute supertasker did not switch it on. For if she did so it must have been through implementing one of the conditional intentions (given resoluteness). And this would require that the lamp never be switched on prior to t . But then the supertasker would have failed to implement some earlier conditional intention, contradicting her resoluteness.

Since the lamp turned from off to on, by the relevant principle of sufficient reason LAMP-1, it must have been caused to be in this state by some episode of switching. But there's nobody around to perform this act! Our supertasker is lonely and resolute, and mere intentions can't move a switch.

I contend that the moral to take from this 'Benardete' setup², is that lamps can turn on, without any act of switching causing them to turn on.³ This falsifies a principle of sufficient reason such as LAMP-1.

Uncaused Hangovers

The selective endorsement of something a principle of sufficient reason is the active ingredient in Parsons' case that you escape from your hour of drinking hangover-free. For, as noted earlier, to get this result he appeals to:

HANGOVER

Hangovers can only be caused by drinking episodes.

We have already argued that similar claims about the Thomson lamp are problematic. I now describe a scenario which falsifies HANGOVER in the same way.

Suppose you are a lonely and resolute supertasker. Call the times t in $\{11 + 1/2^n\}_{n \in \mathbb{N}}$ the *instants*. For each instant t form the conditional intention: *if at t you are not already due for a hangover at 12, drink just enough at t to make you due for a hangover at 12*. Furthermore, you will act only in these circumstances, and will start at a time when you're sober.

It follows that you never drink, but will have a hangover at 12. Consider the last instant, 11.30. Either you are due for a hangover at that time, or you are not. In the one case, you will take no action, and so will have a hangover at 12. In the other case, you will drink just enough to make it the case that you are due for a hangover at 12. So either way, you will have a hangover at 12.

But not because you drank. If you drank at some instant t , it would have to be that you were not, at t , due for a hangover at 12, for you will only act in accordance with one of your conditional intentions. For one of these to be activated (given the absence of interfering factors) you must not have been due for a hangover at the instant immediately prior to t . In that case, you would have implemented your intention to drink at that earlier instant, and therefore (given the absence of interfering factors) would be due for a hangover at 12. Contradiction. So you drink at none of the instants. Since you are resolute in never acting unless one of your conditional intentions is activated, this means you never drink.

²So called after the 'new Zeno' paradox described in Benardete (1964).

³See later footnote for discussion of the alternative diagnosis of the case given by Yablo (2000)

Wait until 12, and you'll suffer the pain. The pain, however, will be not be caused by an act of drinking. So we have a counterexample to HANGOVER.

If Benardete-situations of this kind are possible, the relevant principle of sufficient reason must be given up. Are they possible? Of course, they presuppose the existence of agents of unlimited sensitivity, able to register the state of the world at arbitrarily fine grains. But this is a presupposition shared by supertasking scenarios such as Parsons' putative hangover cure.

The major question is rather: Can one coherently (and resolutely) form a set of conditional intentions of the required sort? It is hard to see how this could be denied, if one buys into the supertasking scenarios in the first place. For, under the supertasking hypotheses, it is easy to imagine an infinite series of machines, one for each instant, that would measure a subject's brain-state to determine whether the subject was due for a hangover at 12, and if necessary, inject enough alcohol to make it the case that the subject was due for a hangover at that time. Why should forming conditional intentions be any harder than building machines to do the job?⁴

Any principle of sufficient reason looks susceptible to refutation if supertasking scenarios are possible. But without a principle such as HANGOVER to appeal to, Parsons' putative hangover cure leads to a situation analogous to that of the original Thomson lamp scenario. We can arrive at no prediction at all about the state, after 12 o'clock, of the individual who attempts the cure. The procedure described by Parsons induces, not a consequence-free drinking session, but rather a singularity in hangover-space. It would be a reckless individual who knowingly subjected themselves to this hazard.

References

- Benacerraf, P. (1962). 'Tasks, supertasks, and the modern Eleatics'. *Journal of Philosophy*, **59**, 765–84.
- Benardete, J. (1964). *Infinity: An essay in metaphysics*. Clarendon Press, Oxford.
- Parsons, J. (2004). 'The Eleatic hangover cure'. *Analysis*, **64**(284), 364–6.
- Thomson, J. (1954). 'Tasks and supertasks'. *Analysis*, **15**, 1–13.
- Yablo, S. (2000). 'A reply to New Zeno'. *Analysis*, **60**(266), 148–151.

⁴Yablo (2000) denies that the Benardete setup is intelligible. He sees it as a situation in which individually coherent subsystems (each one of our machines) are put together to produce an incoherent overall system (the totality of our machines).

I do not think that Yablo's is a plausible diagnosis of the Benardete situation. Yablo's primary model is a case where machines are directly sensitive to what infinitely many of their predecessors have done. As Yablo notes, this gives the ingredients for describing truly paradoxical situations. The scenario that makes the Benardete situation most plausible, however, has it that each machine 'reads off' information only from its local environment. *De facto*, it is sensitive to the activity of other machines, since their actions influence the local environment to which it is sensitive. But this is no part of the *specification* of the machines—unlike Yablo's case. Such 'analytic' sensitivity seems essential to the paradox-producing cases invoked by Yablo.

I do not see, therefore, why the resources needed to make out the Benardete situation are impuned by the putative bad company of infinitary paradoxes. The Benardete setup as described here requires only a presumption that arguably underlies intuitions that supertasks *in general* are coherent: we assume a certain locally described procedure can be 'shrunk' in time and 'repeated' indefinitely often. An objection from infinitary paradoxes to the coherence of this kind of setup would imperil supertasks more generally; and, as noted before, it is a presupposition of the current dialectic that supertasks are possible.