

## **Bad science equals poor not necessarily bad ethics**

David Hunter, Lecturer in Bioethics  
University of Ulster, Northern Ireland  
[d.hunter3@ulster.ac.uk](mailto:d.hunter3@ulster.ac.uk)

### **Abstract:**

In this paper I discuss the often made claim that “bad science is bad ethics”. This claim is typically used by Research Ethics Committees to justify rejecting scientifically problematic research projects on ethical grounds. However I will show that while a piece of research being scientifically poor does make it ethically problematic, this is not always good grounds for an ethics committee to reject it. In particular I will draw a distinction between morally bad and morally poor research and argue that the role of an ethics committee is to enforce morally satisfactory behaviour and encourage morally excellent behaviour. This being the case, I claim that ethics committees ought to reject morally bad research, but not reject morally poor research.

### **Introduction:**

One of the implicit roles of Research Ethics Committees (RECS) both in the National Health Service (NHS) and in the University sector is to ensure high-quality science. While this role is not explicit, it is implied by the requirements for research projects to receive a satisfactory independent peer review before being seen by an NHS research ethics committee.<sup>1</sup> Likewise the Economic and Social Science Research Council’s (ESRC) Research Ethics Framework also indicate this.<sup>2</sup>

Presently in the UK, ethics committees are not considered to have an explicit remit to provide a scientific review of applications. NHS Research Ethics Committees specifically are not supposed to base their judgment on the basis of the scientific quality of an application but solely to focus on ethical issues:

“The Research Governance Framework makes it clear that the sponsor is responsible for ensuring the quality of the science. Thus, protocols submitted for ethical review should already have had prior critique by experts in the relevant research methodology, who should also comment on the originality of the research. It is not the task of an REC to undertake additional scientific review, nor is it constituted to do so, but it should satisfy itself that the review already undertaken is adequate for the nature of the proposal under consideration.”<sup>3</sup>

There are two principal reasons for RECs not having this remit. First, these applications should have received scientific review elsewhere, so this would be a case of double handling. Secondly, ethics committees are not well constituted to performing scientific review; they are, for example, unlikely to have more than one or two members familiar with the particular research methods and paradigms of a specific piece of research. This often makes it inappropriate for an ethics committee to make scientific comment, as they do not have the requisite expertise. Indeed it has been argued that, with the increasing amounts of social science research in the NHS and the use of research methodologies such as qualitative research, ethics committee membership needs to be adjusted to include expertise within this research paradigm.<sup>4,5</sup> Some ethics committees deal with this by providing ethical requirements, but only making suggestions with regard to the relevant science.

Nonetheless there is a principle which is often used to bridge the gap between scientific review and ethical review. This principle is that bad science is bad ethics; in other words that there is something morally wrong about carrying out bad science.<sup>6</sup> This sort of view is expressed by Angus Dawson and Steven Yentis in their forthcoming paper *Contesting the Science/Ethics Distinction in the Review of Clinical Research*.<sup>7</sup> While I agree that there *are* cases where to allow certain bad science to go ahead would be morally objectionable, I do not think that these examples show that ethics committees should *always* rule against research which they construe as bad science.

For the purposes of this paper bad science is research which is methodologically unsound. By this I mean there is a fundamental flaw in the design i.e. the research cannot answer the question it intends to answer. That said, it should be recognised that bad science comes in many guises and degrees; for example, perfectly sound questionnaires can be used to carry out bad science if the participant selection is biased, or if too much is claimed from the results.

Bad science with human participants (or animals) is clearly ethically problematic; it imposes costs and potentially risks on the participants without much likelihood of any benefit. While it is unquestionable that doing research which is bad science is not morally excellent, it might be questioned whether ethics committees are obliged to enforce moral excellence or merely a moral minimum.

A distinction is commonly drawn between moral obligation and moral excellence.<sup>8</sup> While this distinction is hotly debated in some circles, and arguably rejected by at least one major theory of ethics (consequentialism), it is usual to recognise a difference between what we ought to do and what is superogatory i.e. those things we could do, which it would be better to do, but which are not morally obligatory.<sup>9</sup> The reasoning behind this distinction is straightforward; there are many things we could do which would be good, but to require people to do these things would be very burdensome (e.g. giving most of our money to charity, spending our days patrolling the streets to help little old ladies cross the road, etc.)<sup>[1]</sup>

The corollary of this is that there are at least two sorts of moral wrongs: (i) actions that it is morally obligatory to avoid, and (ii) actions which would be morally better but are not obligatory to avoid. In the title of this paper I have deemed this distinction as one between morally bad and morally poor. This distinction is not discussed much in the literature but is a natural outcome of making the distinction between acts which are morally obligatory and those which are superogatory.<sup>[iii]</sup>

Once this distinction is made, then it is clear that establishing that bad science is morally objectionable is not sufficient to show us that Research Ethics Committees should always reject research which is bad science. Instead two further questions need to be addressed:

1) Whether scientifically bad research is morally bad or simply morally poor?

2) What is the role of the research ethics committee, and whether in particular is it required to enforce a standard of moral excellence or a moral minimum?

### **Is scientifically bad research morally bad or morally poor?**

*Case 1:* A researcher wishes to study whether a particular drug will aid diabetics. This drug imposes some significant risks of liver failure on the participants, but the researcher argues that the benefits outweigh these potential costs. Unfortunately the study is over-ambitious and flawed, the researcher has little chance of achieving power within the time frame of the available funding, the drug is contra-indicated against being used in combination with diabetes and the evidence presented to the committee that this may be of benefit to diabetics relies on flawed assumptions.<sup>[iiii]</sup> To add insult to injury, the placebo selected for use by the researcher is a sugar pill, with no consideration of either the issues involved in giving diabetics sugar pills or how this is likely to remove the blindness of the trial.<sup>[iv]</sup><sup>10</sup>

*Case 2:* A small-scale questionnaire-based study is intended to be carried out to investigate people's preference for fizzy or non-fizzy drinks. Again it is unlikely that the research will achieve power, and this time the questionnaire design is flawed such that the answers to the questions being asked will not be useful to answer the overall research question.

In the first case it seems clear that the poor nature of the science of this study does mean that it is morally bad. This is because the participants are being put at serious risk, without any possibility of the research actually answering the set question.<sup>[v]</sup>

In contrast, the research in the second case, while not ideal, poses no serious risk of harm despite being scientifically weak. Moreover, the cost to the participants in terms of time is minimal and the risks are no higher than getting cut by paper filling out the questionnaire.

Ruling out this research on the grounds of poor science seems obstentious and nit-picky. While one could not question that the research is ethically poor because of the poor

science, it is a genuine question as to whether or not the research ought to be prevented because of this.

This, however, leaves us with a puzzle; it seems that the answer to the question as to whether scientifically poor research is ethically bad or just ethically poor is an unresolved question. The answer depends on just how bad the science is when weighed against the likely costs, benefits and possible risks for the participants.

To explore this question, we must first explore why scientifically bad research might be morally objectionable.

## **1. Norms of science**

While science is commonly seen as objective and impartial, the process of science has certain built-in ethical norms.<sup>11</sup> In particular there is a commitment to both seeking the truth and not claiming anything beyond what the data can support.<sup>12</sup> Scientifically poor research will clearly violate the first commitment and, depending on how and if it is disseminated, may violate the second commitment as well. While this may be ethically objectionable, it does not yet tell us whether it is either ethically bad or ethically poor. I am inclined to think, though, that it is more likely to be merely poor than bad. There are two reasons for thinking this is the case. First, there is a spectrum of bad science which ranges from hopelessly poorly-constructed projects, which could never answer the study question, to well-designed projects that either due to constraint in resources, such as finances, or constraint in scope, such as being part of a relatively short (one year) research degree, are unlikely to enrol enough participants to achieve a properly powered study. It would seem that even if the first sort of scientifically bad research is seen as ethically bad, it is hard to see the second set as anything but merely ethically poor, and perhaps not even that. Secondly – and relatedly – there are often ways to improve the science of even scientifically valid projects significantly by various ethically dubious means e.g. making the information sheet less transparent in order to increase enrolment in the study or by designing studies as “opt out” rather than as “opt in”. If the commitment to the norms of science had great moral weight, such that failing in this commitment was ethically bad, then we might consider that attempts to increase the quality of the science might outweigh other ethical considerations and so should be allowed, even if they involve some unethical means. So while upholding the norms of science is important, some of the time its importance will be such that bad science is ethically bad, but in other cases it may merely be ethically poor.

## **2. Indirect Harms**

Following on from the concern about the norms of science is a concern about the possible indirect harms of allowing bad science to proceed. These concerns are most prominent if the research is published or if a change in a treatment or in how health care professionals interact with their clients results because of the research. This is because the publication would be misleading and these changes are at least unwarranted and potentially harmful.<sup>[vi]</sup>

There are two things to be said here. First, not all or even much research turns out to be hugely influential; the chances of prominent publication are dependent on the results, something that an ethics committee is not well placed to judge. Furthermore researchers may well not be intending to publish their research in a formal way, for example if it is part of a student research project. Secondly, even well constructed, rigorous research can be abused by claiming conclusions not properly justified by the results.<sup>13</sup> Finally of course, Research Ethics Committees are not the final guardians against the publication of bad research. Journals themselves review research submissions with typically rigorous peer review process and if there were any doubt about a submission's scientific integrity it ought to be rejected.<sup>[vii]</sup><sup>14</sup> So again, while this seems morally problematic, it is not clear either that the Research Ethics Committees are well suited to deal with this problem, or whether, indeed, this is always going to be morally bad rather than merely morally poor.

### **3. Risks/Costs to participants for no gain**

As well as indirect risks there may of course be direct risks or costs to the research participants from being enrolled in research projects which involve bad science. This particular problem is twofold. First, much research involves some risk or cost for the participants. This is typically considered "ethical" because the participants agree to take these risks and bear these costs and because the costs are seen as outweighed preferably by benefits. Preferably the participants themselves will reap these benefits but, if not, then significant benefits to others may outweigh reasonably insignificant risks or costs for the participants.<sup>15</sup> Clearly if scientifically a project doesn't stack up the risks/costs will still be present but the potential benefits will not. Secondly, additional risks or costs might be imposed on participants because of the poor science. For example it may be possible to enrol far fewer research participants, or the research could be constructed or conducted in a different, less risky fashion. This is clearly morally objectionable and sometimes definitely morally bad. These include times when significant risks or costs are imposed on the research participants. Not all research, however, will impose these sorts of serious risks or costs. For example, it is hard to see the serious risks or costs that an anonymous five-minute questionnaire about your preferences in terms of a particular fizzy drink is likely to impose, even if the study is poorly designed.<sup>[viii]</sup> So while some of the time this is an excellent reason for ethics committees to reject a research proposal, (i.e. when it is morally bad) at other times when no significant risks or harms are posed by the research it will be merely morally poor, not bad.

### **4. Waste of resources**

Finally, bad science could be considered morally objectionable because it represents a waste of scarce resources that could be better used elsewhere. Many resources are used in the process of research: finances, tissue samples, willing participants and so on. In each case these resources used are scarce.<sup>16</sup> Clearly, the waste of millions of pounds' worth of funding in a particular badly-designed research project would be morally bad. In contrast, it would seem that a smaller-scale waste of resources, such as what might occur in a badly designed student project, while still morally objectionable, would only be morally poor.

So we have established two things. First, bad science is morally objectionable. Secondly, bad science may be either morally bad or morally poor depending on the details of the case. As of yet this does not tell us what a research ethics committee ought to do, since we need to know whether an ethics committee ought to enforce moral excellence or simply moral satisfactoriness.

If a committee's role is to enforce moral excellence, then it ought to reject all research that is scientifically bad, since it is morally objectionable. If, on the other hand, their role is to enforce moral satisfactoriness then they will reject those projects which are ethically bad, but allow those which are ethically poor.

## **5. Role of the ethics committee**

It is common for frameworks to insist that committees work to the highest moral standards, in other words that they are enforcing moral excellence.<sup>17</sup>

However there are reasons to be sceptical about whether this is what happens or, indeed whether it is what ought to happen.

1. Many (even scientifically well constructed) research projects are not, morally excellent in every particular. There are two ways this occurs. First, there are commonly trade-offs between different ethical principles in the conduct of research. Secondly, it is often the case that, while the minimum requirements of these principles are lived up to, the highest ideals of these principles are rarely achieved.

With regard to the first concern, the trade-offs between different moral principles such as beneficence and non-maleficence, or autonomy and beneficence, become problematic because in the case of non-consequentialist accounts of moral excellence, it is hard to justify the claim that something is morally excellent if it involves trade-offs.<sup>18</sup> On consequentialist grounds "moral excellence" would typically be simply bringing about the best outcome. On at least some other views, there is something regrettable about having to trade off between principles. Though this is sometimes necessary, "moral excellence" would involve respecting all of the important moral principles.

With regard to the second concern, research projects often only minimally satisfy moral principles such as those important in Beauchamp & Childress's four principles approach: autonomy, beneficence, non-maleficence and justice.<sup>19</sup>

One example of this would be justice. Many international guidelines suggest, in regards to the provision of post-trial care, that it would be best if this was provided but it is not required.<sup>[ix]20</sup> It seems clearly the case that the provision of post trial care would be, morally best. Thus when post trial care isn't provided it is while possibly morally acceptable but still far less than morally excellent.

Likewise, in the UK, the NHS presently refuses to provide insurance or guarantees for non-negligent harm which results from being involved in research.<sup>21</sup> One might think that if this were provided, both in terms of justice and non-maleficence, this would be at least better, if not, perhaps obligatory.

If we were to insist on moral excellence, these research projects, along with those that are scientifically poor ought to be rejected by ethics committees. In other words moral excellence is too high a standard to which research should be held.<sup>[x]</sup>

2. As political theorists and ethicists are now well aware, we face a difficulty in getting any particular theory accepted and adopted on a national level. This is the problem of moral pluralism, namely that few countries' citizens share one moral theory and point of view. In contrast, in most countries there is a plurality of alternative and contradictory moral standpoints adopted by members of that country.<sup>22,23</sup> As such most present political theories aim to be supportable by several broad moral standpoints. Typically they aim to achieve consensus between different potentially opposing view points. In the context of research ethics and identifying moral excellence there is a similar problem. Unless we adopt just one moral theory giving an account of moral excellence seems problematic since, almost definitionally, what one theory claims is morally excellent, other theories will not consider morally excellent and may well consider morally problematic.

But adopting one moral theory seems hard to justify given the fact of moral pluralism. In contrast achieving consensus between different ethical theories on what might be considered morally satisfactory is much easier (though of course still difficult). Plausible moral theories tend to converge on what ought to be definitely avoided, because otherwise they will tend to be rejected.<sup>24</sup>

In other words viable moral norms in a pluralist society require consensus and consensus is much easier to achieve in terms of morally bad issues than in terms of which issues are merely morally poor.

3. In general we avoid legally enforcing moral excellence and often even morally satisfactoriness. Take for example a famous case, the Kitty Genovese case. Kitty Genovese was murdered while 38 individuals heard or saw suspicious events taking place.<sup>25</sup> Of those 38 people, none aided Kitty, nor did they even contact the authorities. Nonetheless legally, they did nothing wrong. What seems particularly outrageous about this example was that they didn't even take the minimally inconvenient step of contacting the authorities. In most legal constituencies there are only minimal legal duties to aid, despite it being morally excellent to intervene and aid in these situations.<sup>26</sup>

While many practices may be seen as morally objectionable, such as being rude, lying etc., only a few morally objectionable actions are seen as serious enough to warrant criminal proceedings. In other words, typically in law, only those morally objectionable actions that might be seen as morally bad are legislated against.<sup>[xi]</sup>

So it would seem that it would be unusual for ethics committees to hold researchers to a standard of moral excellence. Likewise other professionals, while held to the high moral standards of their professions, are not held to a standard of moral excellence. Instead again they are required to behave satisfactorily, not excellently.<sup>[xii]</sup>

### **Conclusions:**

Committees ought to enforce moral satisfactoriness, but encourage moral excellence. This means that if the poor quality of the science of a particular project means that it is morally bad then an ethics committee ought to reject it because it doesn't meet the criteria of moral satisfactoriness. If however a project is scientifically bad such that it is only morally poor, then the committee ought not to reject the project at least on those grounds. However they should suggest to the applicant that there are scientific deficiencies in their project in order to give the applicant the chance to avoid, on a voluntary basis, morally poor behaviour of which they may well not be aware.

### **Notes:**

- i. I am not suggesting that a modicum of these sorts of activities is not morally obligatory, just that doing these activities full time, even though that may produce overall the greatest amount of good, is not obligatory.
- ii. Since on a plausible account of ethics, it cannot be morally bad to fail to do superogatory acts, but it may be morally poor. The distinction drawn here is similar to that drawn between the minimally decent Samaritan and the good Samaritan in Judith Jarvis Thomson's famous article, *A Defense of Abortion*.<sup>27</sup>
- iii. Power in this context is a statistical term, a piece of research has power if its results can be relied on as generalisable rather than just being a characteristic of this particular research population.
- iv. In a typical clinical trial the study is described as double blinded if neither the researcher nor the participants at the time know who is getting the placebo and who is getting the treatment. This is done to minimize the effects on the participants of psychological beliefs of the effectiveness of the new treatment, and to prevent the researcher from reporting results based on biased observations.
- v. Obviously in practise the ethics committee here ought to ask for more evidence about the efficacy of the proposed treatment and require the study to be reformed to achieve power, rather than simply reject it.
- vi. Note though that the changes could still be beneficial as the researcher may have chanced upon a right answer despite not actually having evidence supporting the answer and the present treatment may well be no more scientifically well supported than the new treatment and may do more harm than the new treatment or procedure.
- vii. This does not of course insist that this always occurs or that very important journals don't get it very wrong on occasion. We need look no further than the recent Korean stem cell scandal for a reminder of this.<sup>28</sup>

- viii. I am not suggesting here that, as a class, questionnaire-based research is necessarily low risk. Clearly it would be possible to do very risky research in this manner for example on the experience of rape victims, on suicide or arguably on the identification of transplant recipients with their new organ.
- ix. Post-trial care in this context means providing for the health care needs of research participants and, particularly if the tested treatment is effective, providing the treatment for the research participants in both the active and the control arms of the study.
- x. It might be said that my argument relies on a false dichotomy between moral excellence and a much more relaxed account of moral satisfactoriness. We could alternatively hold research to a high, but not excellent moral standard. I think this is fair point; however as soon as we move from an account based on moral excellence, then some morally poor research, perhaps less than according to my account, will be permissible.
- xi. This is of course only one account of the justifications for particular laws, another alternative popular view in legal philosophy is that laws are not based on enforcing morality at all, instead they are simply a means to allow us to live together peacefully. While I don't hold this view myself, I also don't think it is incompatible with my overall point, namely that ethics committees ought not to enforce moral excellence.
- xii. This may not be immediately obvious, but consider this example. Which of these two is more moral excellent? (1) The doctor who carries out his job competently and well. (2) The doctor who carries out her job competently and well, but does it only charging just enough so they can live well enough to be able to carry out their job well, thus saving money for the health care system and allowing more money to be devoted to the provision of other health care. It seems, assuming *ceteris paribus*, clearly the second doctor is more morally excellent, and so if we expected doctors to be morally excellent we would expect them to behave like the second doctor, which we clearly do not.

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## References

- <sup>1</sup>Department of Health, *Governance arrangements for NHS Research Ethics Committees*. July 2001. 23. (Accessed 11/12/06) <http://www.dh.gov.uk/assetRoot/04/05/86/09/04058609.pdf>
- <sup>2</sup> Economic and Social science Research Council. *Research Ethics Framework*. 2005. [http://www.esrc.ac.uk/ESRCInfoCentre/Images/ESRC\\_Re\\_Ethics\\_Frame\\_tcm6-11291.pdf](http://www.esrc.ac.uk/ESRCInfoCentre/Images/ESRC_Re_Ethics_Frame_tcm6-11291.pdf)
- <sup>3</sup> Department of Health, *Governance arrangements for NHS Research Ethics Committees*. July 2001. 23-24. (Accessed 11/12/06) <http://www.dh.gov.uk/assetRoot/04/05/86/09/04058609.pdf>
- <sup>4</sup> Dawson, A. 'A messy business: qualitative research and ethical review'. *Clinical Ethics*, 2006; 1(2): 114-116.
- <sup>5</sup> Ramcharan, P. Cutcliffe, JR. Judging the ethics of qualitative research: considering the "ethics as process" model. *Health Soc Care Community*. 2001 Nov; 9(6):358-66.
- <sup>6</sup> Department of Health, *Research Governance Framework for Health and Social Care*. 2005:13. (Accessed 11/12/06) <http://www.dh.gov.uk/assetRoot/04/12/24/27/04122427.pdf>
- <sup>7</sup> Dawson, A & Yentis, S. 'Contesting the Science/Ethics Distinction in the Review of Clinical Research'. *Journal of Medical Ethics* (forthcoming)
- <sup>8</sup> Rachels, J. *The Elements of Moral Philosophy*. New York: McGraw Hill College Division, 2000.
- <sup>9</sup> Hershenov, D. B. A Puzzle about the Demands of Morality. *Philosophical Studies*. 2002 Feb;107(3): 275-289.
- <sup>10</sup> Hunter, D. Placebos, and moral perils for participants. *Research Ethics Review*. 2006;2(2):71-72.
- <sup>11</sup> Macrina, F. L. *Scientific Integrity: Text and Cases in Responsible Conduct of Research*. 3<sup>rd</sup> Edition ASM Press, 2005.
- <sup>12</sup> Merton, R. K. Science and the Social Order. *Philosophy of Science*. 1938;5:321-337.
- <sup>13</sup> Kohn, A. *Abusing Research*. (Accessed 11/12/06)

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<http://www.alfiekohn.org/teaching/research.htm>

<sup>14</sup> Council of Science Editors, *White Paper on Promoting Integrity in Scientific Journal Publications*. (Accessed 11/12/06)  
[http://www.councilscienceeditors.org/editorial\\_policies/whitepaper/entire\\_whitepaper.pdf](http://www.councilscienceeditors.org/editorial_policies/whitepaper/entire_whitepaper.pdf)

<sup>15</sup> Department of Health, *Research Governance Framework for Health and Social Care*. 2005: 8. (Accessed 11/12/06)  
<http://www.dh.gov.uk/assetRoot/04/12/24/27/04122427.pdf>

<sup>16</sup> Spilker, B. Cramer, J.A. *Patient Recruitment in Clinical Trials*, New York: Raven Press, 1992.

<sup>17</sup> Department of Health, *Research Governance Framework for Health and Social Care*. 2005: 2. (Accessed 11/12/06)  
<http://www.dh.gov.uk/assetRoot/04/12/24/27/04122427.pdf>

<sup>18</sup> Beauchamp, Tom L. and Childress, James F. *Principles of Biomedical Ethics*, 5th ed. New York: Oxford Univ. Press, 2001.

<sup>19</sup> Ibid.

<sup>20</sup> Nuffield Council on Bioethics. *The ethics of research related to healthcare in developing countries*, 2002. (Accessed 11/12/06)  
[www.nuffieldbioethics.org/fileLibrary/pdf/errhdc\\_fullreport001.pdf](http://www.nuffieldbioethics.org/fileLibrary/pdf/errhdc_fullreport001.pdf)

<sup>21</sup> NHS R&D Forum, Primary Care Working Party. *Indemnity arrangements within Primary Care – who is responsible for what?* January, 2005. (Accessed 11/12/06)  
[http://www.rdforum.nhs.uk/workgroups/primary/indemnity\\_arrangements.doc](http://www.rdforum.nhs.uk/workgroups/primary/indemnity_arrangements.doc)

<sup>22</sup> Rawls, John. *Political Liberalism*. New York: Columbia University. 1996.

<sup>23</sup> Crowder, G. *Liberalism and Value Pluralism*. New York: Continuum, 2002.

<sup>24</sup> Rachels, J. *The Elements of Moral Philosophy*. New York: McGraw Hill College Division, 2000.

<sup>25</sup> Thomson, J. J. A Defense of Abortion, *Philosophy and Public Affairs*, 1971:1(1): 47-66.

<sup>26</sup> Ratcliffe, J. M. ed. *The Good Samaritan and the Law*, New York, 1966.

<sup>27</sup> Thomson, J. J. op. cit., 1(1): 47-66.

<sup>28</sup> New York Times, *Disgraced Korean Cloning Scientist Indicted*. May 12, 2006.