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An empirical approach

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In the analysis of most problems in bioethics, knowledge about the state of the world and our abilities to intervene in it play a significant role. Many ethical problems only emerge when our ability to intervene in the world increases, and it is often important to know in some detail what is possible and what is not. In our ethical arguments we can therefore often discern premises of two kinds: ethical premises and empirical premises.

This means that valid ethical arguments can become false if either of these two kinds of premises is false. If I, for instance, base my analysis of the ethics of communication with persons with terminal illness on the *empirical premise* that most people who are told that they are terminally ill will become severely depressed and will never recover from their depression, I may well reach a quite different *ethical conclusion* than if I base the analysis on the premise that such depression is neither widespread nor permanent.

We can further subdivide empirical premises into three groups, each answering a different kind of ethically relevant question:

1. What is the state of the world?
2. What are our possibilities of intervening in the world?
3. What are the consequences of our interventions?

The first task of an empirical approach to bioethics is therefore to identify the explicit and implicit/enthymematic empirical premises in ethical arguments and try to find out whether they are supported by research findings and theories in the relevant scientific fields. In some cases the knowledge that we need may be biological or biotechnical,[1] in others it may be sociological, anthropological or psychological. It will often be found that our ethical arguments use empirical premises that are not well-substantiated or that are directly contradicted by available research.

An important part of this analysis of empirical premises is an analysis of the quality of the evidence we have for a given proposition. The empirically minded ethicist must therefore possess knowledge about a range of research methodologies in order to be able to read research papers in a suitably critical

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way. The mere fact that some research paper supports proposition X is rarely enough to claim that we know X to be the case. He or she must also be well versed in information retrieval from all of the major scientific databases covering medicine, psychology and the social sciences since the relevant information is often not found just by searching within one of these fields.

In some instances we will, however, find that the empirical premises that are used have never been investigated by the relevant scientific field, either because the question that the premise is an answer to has only been raised very recently, or because the question is only of interest within an ethical discourse. The second task of an empirical approach to bioethics is therefore to identify empirical research questions that need to be answered as part of answering important ethical questions.

A possible third task of an empirical approach to bioethics is to give us knowledge about how actors in the healthcare field identify and analyse ethical problems and what their (implicit) ethical framework is. This third task is more contentious than the first two tasks, because it can be argued that how people do in fact reason about ethics has no bearing on how they should or ought to reason about ethics. Pursuing this discussion is far beyond the scope of the present paper, but even if the argument is correct, which I personally doubt (Holm 1997), there are strong pragmatic reasons to be interested in this kind of reasoning. If we want to influence the ethical decision-making of healthcare professionals and patients we need to understand their way of looking at the ethical world if we are to engage them in any kind of reasonable discussion.

If the accounts in the present case had really been first-person accounts of the dilemmas experienced by persons involved in various roles in the testing for BRCA1 they could very well have formed part of the material of a research project into the (ethical) reasoning and decision-making in this context. Such a study could have followed a methodology along the lines of Hallowell *et al.* (1997).

The theory-ladenness of social knowledge

A specific problem may be thought to occur when the research we rely on for our empirical premises is not biological but from the social sciences, because social science research is often much more overtly influenced by theory than is biological research. Now, there are good reasons to believe that all research has to be theory-based and that many seemingly objective biological statements are as theory-laden as statements in the social sciences (Chalmers 1999) but this is probably not enough to dispel the nagging suspicion that many biological scientists or healthcare professionals have that statements based on social science research are inherently more uncertain than firm biological facts. Is this true? And if it is true, is it a serious problem for the use of social-science results as premises in ethical arguments? It is important to distinguish two variants of this critique.

The first variant of this critique points to the inherent time and context dependence of social knowledge. Whereas the substrate of biological research is stable nature,[2] the substrate of social research is the everchanging features of human societies and cultures. Results from research carried out on family dynamics in British families one hundred years ago can no longer be used as accurate descriptions of the modern British family. Social knowledge becomes obsolete; it has a 'sell by date'. If this is true, it does, however, only show that the empirically minded bioethicist should make sure that the social-science-research results he or she relies on are recent and not obsolete. A similar argument could be put forward with regard to the cultural context in which research is performed. Research results from one culture may not easily be transferable to other cultures. But this again only shows that one has to be careful in choosing which research results to rely on. It is also questionable whether these criticisms actually affect all results of social-science research. Although some products of research are fairly specific statements about social reality, other products of research are theoretical frameworks or smaller theory fragments, and it is not clear that these become obsolete or are culturally relative in the same way as the specific statements. Our understanding of the practice of gift-giving and the function of gifts – which is highly relevant to the current case – is, for instance, still very much influenced by theoretical frameworks developed by Bronislaw Malinowski, Franz Boas and Marcel Mauss at the beginning of the 1900s (Malinowski 1922, Boas 1925, Mauss 1954). Whereas the Trobriand society that Malinowski described has changed radically since that time, the underlying analysis of 'the gift' is still mainly the same.

The second variant of the critique is potentially more damaging. It claims that the theory-ladenness of social-science research means that the research results are dangerously subjective. Unless I subscribe to the underlying theory, I have no reason to accept the results as valid. It is again far beyond the scope of this paper to analyse this claim in full, but it is perhaps worth pointing out that all statements about social events are theory-laden, even so-called common-sense statements. Many of our ethical arguments rely on premises about what will happen if certain social structures are changed, or certain social interventions performed, and it is arguably better to use premises where I am aware of their theoretical background, than premises where the theory-ladenness is hidden.

Identifying empirical premises

Let us get back to the case at hand and see whether we can identify the empirical premises that are important for an ethical analysis (Genetic Information 1999).

The following empirical questions of a medical or biotechnical nature play a role for the framing of the problem and possibly also for the choice of the ethically optimal solution:

1. Are there any other sources of informative genetic material than Phyllis?
2. Does the family belong to a subpopulation with known increased frequency of founder mutations?
3. Are there any prognostic or therapeutic differences between BRCA1-related breast cancer and non-BRCA1-related breast cancer (Phillips *et al.* 1999)?
4. Are there any interventions that can decrease breast-cancer risk and/or breast-cancer mortality in BRCA1-mutation carriers (Eeles 2000, Eeles and Powles 2000, Morrow and Gradishar 2002)?
5. Are there any interventions that can decrease ovarian-cancer risk and/or ovarian-cancer mortality in BRCA1-mutation carriers?

There are at least six women in the family, apart from Phyllis, who have had breast or ovarian cancer, and at least one man who is very likely to have had the mutation (the brother of Jane's grandmother).[3] It is quite likely that tissue or blood samples from one or more of these can be found and BRCA1 testing and/or sequencing performed on these samples. Sequencing from fixed tissue samples is probably at the moment not as accurate as sequencing from unfixed samples or fresh tissue, and it is much more complex and costly, but it is still possible (Wong *et al.* 1998, Tobias *et al.* 2000). Pursuing testing/sequencing of other sources of informative genetic material would be even more likely to succeed if the family belonged to a subpopulation with a known increased frequency of founder mutations, since it would then be possible to carry out direct testing for these specific mutations.[4]

If there are other sources of informative genetic material it means that we can help Jane without involving Phyllis and without Jane getting any knowledge about Phyllis.

If the answers to questions 3 or 5 are affirmative then it may well have been rational to test Phyllis for her BRCA1 mutation, even in a situation where she had, a priori, told us that she would not allow the information to be used to help anyone else in her family. If Phyllis's cancer is prognostically or therapeutically different because it is BRCA1-related, or if knowledge of her BRCA1 status can help us to prevent her from developing or dying from ovarian cancer,[5] then the testing is of potential benefit to her (and it was presumably because she had a different perception of the answer to one of these questions than the geneticist that the oncologist initiated testing).[6]

If the answers to questions 3–5 are negative, then it makes little sense to test either Jane or Phyllis.

From the social sciences and psychology we need to look for the answers to the following questions:

1. Are Phyllis's fears that she may be (further) blamed and stigmatised reasonable?

2. Is Phyllis's reaction unusual?
3. What are the likely social and psychological effects on Jane, her husband, their children and the more extended family and kinship of testing if Jane either is or is not a carrier of the BRCA1 mutation?

If Phyllis's fears are well-founded we are, in effect, asking her to sacrifice part of her well-being in order to secure benefits for someone else. In this case we do not have sufficient information about the relationship between Phyllis and her kin to make any very firm statements about what the effects would be if the kin became aware that Phyllis was carrying the BRCA1 mutation. At a more general level we know that stigma (i.e. the identification of someone as flawed, discredited or spoiled (Goffman 1963))[7] often does attach to chronic illness and also to known or suspected carriers of genetic diseases (Charmaz 2000). Stigma may even attach to healthy heterozygous carriers of recessive disorders. It is thus, at the very least, not unreasonable that Phyllis fears further stigmatisation.

It is also important to know that Phyllis is not unusual in not wanting to share information with family members. Studies show that daughters and other female relatives of persons with breast cancer are often frustrated in their attempts to get information from the person with the cancer, even in those cases where the affected person is their mother (Chalmers and Thomson 1996, Chalmers *et al.* 1996). This makes it considerably more difficult to conceptualise Phyllis purely as an irrational and embittered old spinster.

Phyllis's reaction is also explainable in another way through an analysis based on theories about the nature and function of gifts. It is a central feature of the system of gifts as it works between social equals that a gift has to be reciprocated at some later time by a gift of similar value. Not reciprocating is a serious matter that displays disdain for the original gift giver or mere callousness. In this family this process has apparently broken down a long time ago, at least seen from Phyllis's perspective. She believes that she has given her mother and sister gifts of considerable value, by having cared for them when they were ill, but she has never received anything back. And on top of this, she is now being asked to give another gift to her family!

With regard to the effects on Jane and her family we know that genetic testing for BRCA1 mutations is not sociologically and psychologically unproblematic, but we also know that it seldom leads to any major social or psychological problems if the family unit in which it is done is stable. BRCA1 testing and the reception of the result may not solve as many problems, and make decision-making easier, as Jane may expect, but it is unlikely to cause her major distress (Lodder *et al.* 1999, Reichelt *et al.* 1999).

What about Jane and her husband's two girls if Jane eventually has the test; should they be told of the test result if it is positive, and if so when? If Jane has the BRCA1 mutation each of her daughters has a fifty-per-cent risk of having inherited it, and if the moral arguments support disclosure between Phyllis and Jane, they surely support disclosure between Jane and her daughters. Jane's daughters are currently only 7 and 9 years old and it may not be the right time to communicate with them about cancer risk, although it may well become necessary if Jane chooses to have a bilateral prophylactic mastectomy. We know surprisingly little about the effects on children of being given information about genetic risk even though studies indicate that around half of all parents tested for BRCA1/2 mutations will inform their children about the test result (Tercyak *et al.* 2001). This lack of information was pointed out some years ago (Michie and Martean 1996) but the call for further research seems to have been largely unheeded. This means that we lack important empirical premises relevant for two kinds of arguments: arguments about if and when children should be told about genetic risk; and arguments about whether children should ever be tested for adult-onset genetic disorders. In the literature it is for instance mentioned that 'such testing could cause serious harms, including damage to the child's self-esteem and distortion of the family's perception of the child' (de Wert 1998: 46) but it is surely an empirically answerable question how frequent and how severe such harms are.

Men: the forgotten group in genetic counselling

In one of the Sherlock Holmes stories a key piece of evidence used by the great detective is 'the dog that didn't bark' and in the current case there is also a curious absence that, once noted, may help us to raise new and interesting questions about the case. This absence is the specific lack of interest in poor Uncle George, and in general in the few men that are mentioned by the interlocutors in the case.

Uncle George has a fifty-per-cent risk of being a carrier of the BRCA1 mutation in the family and this puts him at an increased risk of breast cancer, prostate cancer and colon cancer (Struewing *et al.* 1997), but it also puts his two children at a twenty-five-per-cent risk of carrying the mutation, i.e. exactly the same risk as Jane's two children prior to any testing of Jane. Why doesn't George figure much more prominently in the case? He should at least have had some mention in the geneticist's story because the geneticist will know about George's risk from drawing up the family tree.

For the empirically knowledgeable ethicist the absence of George is worrying but not really surprising. In Western societies women are the ones who are mainly responsible for the social maintenance of family ties, including the social maintenance of the family genealogy. Women are 'the genetic housekeepers for the kinship' (Richards 1996, Stacey 1996). 'Genetic' problems in families will therefore mainly be discussed by, and seen as problems by, the women in the family (Rees and Bath 2000). This is reinforced by the asymmetric contribution to human reproduction (i.e. the empirical fact that only women are pregnant) and also leads to a focus on women in genetic counselling. When, as in this case, we are furthermore dealing with a gene that increases the risk of cancer in a highly symbolic female body part, everything is set for a scene where males are likely to be written out of the script (McAllister *et al.* 1998). Any proper resolution of the case must therefore write the men back in.

The absence of the male perspective may in this case hide one possible way of resolving the problem without going against Phyllis's expressed preferences. We know very little about Uncle George from the case but we have one piece of positive information and one piece of negative information that might be relevant. The positive information is that Uncle George knows where Phyllis lives and we can perhaps assume that he has kept some kind of contact with her, and may even know that she has had breast cancer. The negative information is that Phyllis does not mention Uncle George in her complaints about her family; it may therefore be that she has a more neutral relation to him than to her sister. Why not ask Jane to ask Uncle George to come to genetic counselling? If it becomes clear that he knows about Phyllis's breast cancer, then he may be able to ask Phyllis to have a genetic test in order to help him and his children.

Some further observations on the role of the counsellor

It is usually claimed that genetic counselling should be non-directive, i.e. that it should not be prescriptive either with regard to testing or non-testing or with regard to the response to a given test result. It is interesting to note that in this case the geneticist openly admits that 'my colleague has tried hard to suggest to Phyllis that it would be in the interest of her family to disclose, but she just doesn't see it as in her interest. She feels that she would be blamed and stigmatised'. Why does the idea of non-directive counselling not hold true here? Why does the counsellor believe that he or she knows what it would be best for Phyllis to do, and why does he or she feel justified in trying hard to persuade Phyllis?

We know from a number of studies that genetic counselling is directive, despite the stated policy of non-directiveness (Marteau *et al.* 1994, Bartels *et al.* 1997, Michie *et al.* 1997, Sagi *et al.* 2001) but it is seldom as overtly directive as described here. The case actually describes the dilemma faced by the genetic counsellor very accurately (as we have seen above). It is in all probability in the interest of Phyllis's family to get the information about Phyllis's genetic test, but Phyllis does not see it as in her interest and it is probably not in her interest (unless we claim that she has an interest in doing the morally right thing). If the counsellor was mainly interested in doing what is best for Phyllis she should probably have supported her in non-disclosure. What this case shows therefore is that genetic counsellors do not see the welfare of the patient/client or even the narrow family unit as their only consideration. Taking into account the interests of parties other than the patient/client can be supported on moral grounds (as it has in many of the other chapters in the book), but many of those arguments will support directive counselling in a wide range of circumstances where genetic counsellors would traditionally counsel non-directively.

Another conflict that seems to be hidden under the surface of this case is not a directly ethical conflict but an interprofessional one. Our current possibilities within cancer genetics are relatively new, the first cancer gene being identified in 1985 (the retinoblastoma gene). The possibilities increase rapidly and cancer genetics is therefore a growth industry that will employ many people in the future, but who will these people be? Will they be geneticists, genetic counsellors or oncologists?[8] This is a question with important ethical aspects, since it is clearly the case that patients in this new field should be offered good counselling services. But what kinds of counsellors are best? To answer that question we need an answer to the prior question of what counselling is supposed to achieve, but when we have that answer we still need empirical evidence with regard to what kind of counsellors are best suited to achieving the desired goal. We know that different groups of healthcare professionals counsel in different ways (Marteau *et al.* 1994), and we also know that patients prefer different kinds of counsellors in different situations (Hofferbert *et al.* 2000, Audrain *et al.* 1998), but we still know next to nothing about how different counsellors and/or counselling styles affect the decision-making of the patients. We do not, for instance, know whether non-directive counselling and directive counselling actually lead to different outcomes with regard to patient decisions, or even whether patients can differentiate between non-directive and directive counsellors.

Resource allocation

A final area where the empirically oriented bioethicist can add significantly to the analysis of the case is when we move the discussion from the individual case to the broader issue of resource allocation. A case like this does not occur in isolation: it occurs within the context of a healthcare system with specific funding mechanisms and specific resource constraints. We are unable here to analyse this in depth, partly because such an analysis would have to include a discussion of the effects of the contested patent status of the BRCA1 and BRCA2 genes in order to be complete and that is far beyond the scope of this chapter. It is, however, important to note that BRCA1 testing is currently limited by resource constraints in the UK, both with regard to volume and the methods used. This means that we could ask whether these constraints are just, and to answer that question we would need empirical information about what is offered to other patients in a similar situation, what the cost/benefit, cost/utility or cost/effectiveness ratios are for the different available methods of BRCA1 testing, as well as information about non-economic factors restricting access to BRCA1 testing and counselling.

Conclusion

This chapter has shown how different kinds of results from empirical research are crucial for our understanding of the present case, and for many of the ethical arguments that are relevant in the resolution of the case.

It has also shown that just the analysis of one single case, such as this one, uncovers many areas where more empirical research is needed.

NOTES

1 As in the current case where an important premise setting up the whole dilemma is that 'it is only practical to carry out a presymptomatic test in an unaffected woman if a mutation has already been identified' – this is not a logical truth but an empirical statement based on our current knowledge about BRCA1 mutations and our current methods for detecting and interpreting them.

2 But note that 'nature' also changes. The *Staphylococcus aureus* that bothers us today is not the same as the *Staph. aureus* of forty years ago.

3 He is not marked as dead on the family tree but I will assume that he is, otherwise we could just ask him for a blood sample.

4 Many other groups than Ashkenazi Jews have a limited number of founder mutations in BRCA1.

5 It is interesting to note that this case almost exclusively focuses on breast cancer, although BRCA1 mutations also increase the risk of ovarian cancer, a form of cancer with a considerably higher mortality rate than breast cancer.

6 It is interesting to note that Jane has the impression from her genetic counselling that 'there was evidence to show that women like me who had this operation [prophylactic mastectomy] probably did better than women who just examined themselves and had mammograms'. This seems to indicate that the counsellor may also believe that knowing your BRCA1 status gives you valuable information that may help you to decide how to act.

7 Note that 'stigma' is another very useful theoretical construct from the social sciences that has proven durable over time, even if the concrete context of Goffman's original research has long since changed.

8 And even within the group of oncologists there may be further battles between surgical, medical and radiotherapy-oriented oncologists.

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