

# Chapter 4

## Ethical Tools

### 4.1 Introduction

To encourage public and stakeholder deliberation on the ethical issues involved in technology implementation a number of novel participatory-deliberative tools, procedures and emergent frameworks have arisen to facilitate ethical deliberation amongst different actors with legitimate stakes in technology governance outcomes; though few have been adequately developed and tested to determine their applicability as public policy decision-support tools (Beekman and Brom 2007). This chapter presents three popular tools that have emerged in the fields of bioethics and healthcare ethics, each of which aims to fulfil such a purpose. After examining the philosophical grounding and policy applicability of the current raft of ethical tools, the remaining portion of the book then showcases a series of new deliberative decision-support tools that build upon their strengths and limitations in light of the foregoing discussion on philosophical pragmatism and John Rawls's concept of reflective equilibrium.

### 4.2 Ethical Tools

Kaiser et al (2004) suggest that any given procedure for analysing ethical issues in assisting policy-making must operate as a structured decision-support framework. It is through the application of these methods in practical decision-support or policy-making that they become practical ethical 'tools' (Beekman and Brom 2007). In relation to this practical applicability, Kaiser et al (2004) then go on to propose a set of criteria which such ethical tools must meet; namely they must provide:

- Ample substantive ethical content
- Good opportunities to facilitate transparent decision-making processes
- A multiplicity of stakeholder viewpoints, ethically relevant information and ethical arguments

In this chapter I present three existing ethical tools that fulfil these criteria, each emerging from the applied fields of bioethics and healthcare ethics. I then go on to evaluate their usefulness to the practice of PTA:

1. The Ethical Matrix
2. The Ethical Grid
3. The Ethical Delphi Method

### 4.3 The Ethical Matrix

The Ethical Matrix (hereafter EM) is designed specifically for the examination and assessment of ethical criteria in a given situation, such as a technological development, organisation or policy. Its creator Benjamin Mepham intended the EM to be a means of assisting people in making ethical decisions, particularly those that surround and permeate the introduction of new technologies into society. The EM was originally designed for the purpose of assessing agricultural production systems, such as the technologies and practices of dairy farming, from the perspectives of different groups affected by its employment (Mepham 1999; Mepham 1996), both as a teaching tool for students of agricultural ethics, and then later as a decision-support tool for policy-making and technology assessment.

The underlying rationale is that science and ethics are interconnected. Mepham (2003) argues that ethics is primarily a science of "how we should live"; consequently all technical and scientific issues impact upon this. Mepham's tool therefore appears promising for the analysis of ethics in a PTA context. He asserts that there are two ingredients necessary for the evaluation of the ethical impacts of technologies. The first is a set of *prima facie* principles and the second a list of agents 'that have interests', emphasising that ethical analysis requires a compromise between competing requirements. Analysis therefore needs to be (2005):

- Based in established ethical theory to give it authenticity
- Be sufficiently comprehensive to capture the main ethical concerns
- Employ user friendly language as far as possible

Mepham establishes the EM in normative theory by adopting Beauchamp and Childress's 'principlist' approach. Principlism is an extension of the Rawls's 'common sense rule' (Rawls 1951), applying four (in this case) *prima facie* ethical principles, which have been broadly accepted within their original field of medical ethics (Beauchamp and Childress 2001):

- Autonomy – respecting the decision-making capacities of autonomous persons
- Non-maleficence – avoiding the causation of harm
- Beneficence – a group of norms for providing net benefits
- Justice – distributing benefits, risks and costs fairly

What characterises ‘common sense principlism’ is its derivation not from specific normative ethical theories, but from a selection of principles that are commonly understood within society and thus have a broad degree of support from both ethical theories and cultural beliefs. The matrix then applies these principles to the deliberative consideration of specific practical questions involving a range of different stakeholder positions.

The supposed strength of principlism lies in the allowance of a stronger case based on one principle to outweigh a weaker case based on another in particular circumstances. This presents an alternative to monistic normative ethical theory approaches that tend to assert a single principle (or set of related principles) over others. Mepham applied specific principles according to the field of analysis (i.e. dairy farming) and chose stakeholders affected by the decisions in that sector. Recent revisions of the EM allow, however, for the substitution of different ethical principles to different cases. Applying the matrix to alternative fields changes the moral context, and consequently both principles and stakeholders can be amended based upon their relevance to the case.

The ‘standard’ EM substitutes the four Beauchamp and Childress principles for three, conflating beneficence and non-maleficence into ‘wellbeing’ - for simplification and because of the inter-relationship between preventing harm and enhancing quality of life. ‘Autonomy’ is kept, as is ‘justice’, although this was later re-labelled as ‘fairness’, in reference to the Rawlsian concept of ‘justice as fairness’ (Rawls 1999). The three principles are intended to represent three dominant philosophical perspectives in modern normative ethics: Kantian deontology, Benthamite utilitarianism, and Rawlsian social contract theory (Mepham 2005). He argues that principlism doesn’t constitute an ethical theory in the strictest sense, nor does it use ethical theories, but is in fact a set of moral premises intended to clarify and assist deliberation. The EM avoids ‘expert ethicist’ reasoning by placing evaluation in the hands of ‘non-experts’. Indeed the matrix was originally designed as a teaching tool, so simplicity, clarity and user-friendliness are its primary aims. Such simplicity is achieved by replacing (what is likely unfamiliar) philosophical terminology with commonly understood principles, while their grounding in established theory provides the basis for a robust analysis. In practice, the EM creates a grid format that shows the interactions between the principles and stakeholders. An example of such a matrix, showing the ethical issues of new build nuclear power is shown in Table 4.1.

For each cell of the matrix, the principle along the x-axis is applied to the interests of the ‘stakeholder’ along the y-axis, and the result is used as the basis for discussion. Thus, a plurality of perspectives is shown to some extent within the EM. There are at least four identified ‘stakeholders’ (by broadly conceptualising the term to include abstract elements such as ‘the biosphere’ or ‘future generations’), so the needs and values of multiple groups can be represented. Similarly, the three ethical principles allow for some breadth of ethical debate and the production of an easily understandable tool for use by ethical non-experts. Ethical matrices have been used in a variety of contexts with different identified stakeholder groups and principles and hence with different inputs along each axis. Examples of empirical studies using ethical matrices in the academic literature include:

**Table 4.1** Ethical matrix for new nuclear power

	<b>Wellbeing</b>	<b>Autonomy</b>	<b>Fairness</b>
<b>Nuclear industry</b>	Profit generation, growing employment	Freedom from regulation and planning constraints	Low cost electricity to consumers, alleviating fuel poverty
<b>Citizens</b>	Protection from risk of radiation leaks and accidents	Decision-making input to site selection	Compensation in the face of elevated risks
<b>Future generations</b>	An environment free of radiological contamination	Knowledge about past practices and impacts	Reciprocity across time frames, avoiding discounting of future lives
<b>The biosphere</b>	Environmental remediation of contaminated sites	Maintenance of biodiversity and ecological health	Non-anthropocentric valuation of natural resources

- Food production and commerce (Mepham 2000; FEC 2005)
- Novel or functional foods (which supposedly act like pharmaceutical products claiming specific health benefits to the consumer) (Chadwick et al. 2003; Mepham 1999, 2001)
- Fisheries management and genetically modified fish (Kaiser and Forsberg 2001; Kaiser et al. 2007)
- Forest management (Gamborg 2002)
- Animal farming and husbandry (Mepham 2003; Whiting 2004)
- Carbon capture and storage technologies (P. Boucher and C. Gough 2012)
- Transgenic animal farming (Small and Fisher 2005)
- Xenotransplantation (implantation of non-human organs into human hosts) (Kaiser 2004)
- Environmental remediation, restoration of radioactively contaminated areas and long-term management of radioactive wastes (D. Oughton et al. 2003; D.H. Oughton et al. 2003; Howard et al. 2002; Forsberg and Kaiser 2002; Cotton 2009).

### ***4.3.1 Practical and Meta-Ethical Considerations***

When applied to decision-making contexts for technology assessment and other forms of policy-making, the EM is intended as a tool for mapping out the issues underpinning a decision, rather than determining an ethical decision using some supposed metric of evaluation. By refraining from rule-making or adhering to

ethical doctrine Mepham (2000) argues it is ethically neutral in its intent. Such neutrality is a requirement for pluralistic deliberation on ethical norms, moral values and their application to PTA. The EM therefore alludes to Habermassian discourse or procedural ethics mentioned in previous chapters, whereby the argumentation of moral principles by (communicatively rational) individuals ascribes ethical value to a decision. By considering a range of normative principles, the matrix seeks to remove philosophical bias in influencing the decision outcome. Oughton et al (2004) assert that the matrix helps to avoid bias towards specific moral values and addresses conflicts between different principles in a systematic way. However, even with all relevant information and systematic representation of different values, they recognised that moral judgement must be exercised, whilst also questioning who this moral judge should be. This is important because questioning the legitimacy of non-elected citizen representatives to act as ‘moral judges’ is itself an issue that requires meta-ethical justification.

In practice, the EM has been used in different ways by different implementing organisations. In some cases, such as Boucher and Gough’s study of the ethics of carbon capture and storage technologies, the ethical matrix is used as a framing device for considering different ethical positions in a desk-based study of stakeholder perspectives on the technology, using a data-led process to construct a map of the ethical landscape i.e. emergent interpretations of various actors’ ethical framings of the technology mapped across a range of moral principles (Boucher and Gough 2012). Though not strictly speaking a participatory-deliberative application of the method, it presents a relatively bottom-up model of the EM, in that it is led by different stakeholder ethical positions expressed in documents available in the public domain. In other studies a more active deliberative approach is taken. Gamborg (2002) suggests using the matrix in an expert-led consultation process involving a panel of scientific experts, members of local government, administrative agencies, private industry and members of the public. During consultation, a spokesperson from each group would “present their ‘client’s cases’ (so to speak), in doing so outlining the pros and cons for each group”. Each panel member and each member of the ‘lay’ audience is given a copy of the matrix. After the presentation of the case and ensuing discussion, participants indicate in each cell of the matrix, whether they feel that the ethical principle is likely to be upheld, violated or unaffected by the proposal. By collating these responses it is possible to obtain a verdict (ibid), i.e. a measurement of the prevailing ethical perspectives among the participants. In some respects this scenario is pluralistic, in the sense that it incorporates lay public responses in the matrix. However in this model, public-controlled ethical deliberation does not occur - only lay participant voting or weighting of a top-down matrix.

This proposal also highlights additional problems for participatory-deliberative decision-making, namely that many of the potentially affected stakeholders lack a mechanism for representation as many of the groups have no physical form and cannot take part in decision-making. Although not specifically a criticism of the matrix; many of the key affected groups identified in matrices used by different researchers such as ‘animals’, ‘future generations’ and ‘the environment’ are not

stakeholder actors in the sense that they have no specific voice of their own. Others that could be included like 'the general public' or 'NGOs' do have a political voice, but their interests may be so diverse that they cannot be adequately represented by an individual spokesperson. Also, although it is plausible that some categories such as 'the Environment' can be represented by specific advocacy organisations, NGOs or interest groups (Greenpeace or Friends of the Earth for example); a meta-ethical issue remains around the extent to which proxy representatives can speak on the behalf of others, especially those that lack physical presence.

Though these different interests are difficult to represent in the EM, Schroeder and Palmer (2003) assert such categories of stakeholders like future generations and the environment must be included by default because these groups cannot intervene in the decision-making process and yet are deeply affected by the outcome. It is therefore necessary to identify and interpret the best means for assessing their needs and always include these 'groups' in deliberative decision-making. This raises the problem of a trade-off between meta-ethical validity and practical simplicity in an ethical tool such as this. For example, with each additional stakeholder group that is identified a new row is added, until it becomes too large and unwieldy for use as group discussion tool. Key stakeholders are therefore reduced down to universal groups such as 'local community'. This is problematic, however. Treating diverse groups as homogeneous entities (alongside others such as 'the general public', 'future generations' or 'the Environment'), firstly assumes that a potentially diverse group of matrix-using participants will all understand these monolithic categories to mean the same thing, and secondly, fails to express the diversity of values and interests within these labelled groups. By representing the stakeholder groups as isolated and homogenous categories, this may cause participants to bracket off the effect of group interaction. The problem being, that stakeholder groups tend to operate in a synergistic manner (O'Mahony, 2004); i.e. the ethical 'effect' of one group's actions strongly influences and affects the consequences for and behaviour of other related stakeholder groups. Although some principles (particularly Justice or Fairness) allow for discussion of the relationships within and between different actors, the matrix's design lacks a mechanism to illustrate and record such inter-relationships - it only records the relationship between a technology and each separate stakeholder in isolation.

A new design of matrix showing the intricate latticework of relationships between affected groups would increase the complexity of the model and again may lose the element of transparent simplicity. However, the notion of breaking out of the confines of a 3x4 (or 3x5) matrix is worthy of consideration. The development of tools for ethical assessment in analytic-deliberative contexts may therefore benefit from being based around more detailed mapping of the synergistic relationships between ethical values both within and among stakeholder groups - showing the interactive elements of stakeholder relationships and how these shape moral judgements.

### 4.3.2 *The Choice of Principles*

Similarly questions have been raised over the choices of the principles used and justifying the choice of any three principles over others. Again, the answer is grounded in part by the practical simplicity of the matrix. Having too many ethical principles makes the matrix cumbersome to use. If we were to justify three specific principles for the any specific case, we must question how to choose those which will provide the most informative exploration of the issues. Transposition from agricultural practice to other forms of Technology Assessment requires a re-evaluation of the ethical premises from which the analysis can take place. In some cases where the matrix has been used in decision-making, users have selected different principles. Alternatives such as ‘dignity’, ‘rights’, ‘equality’, ‘fairness’ and ‘solidarity’ etc. have all been utilised (Schroeder and Palmer 2003). However, if this process of principle selection is driven by experts or the facilitators who run participatory-deliberative processes then this raises a meta-ethical problem due to a ‘framing effect’, whereby ethical principle selection is predetermined by experts and hence ‘top-down’, in the sense I have used before. As I have argued, in PTA this is untenable. The function of a participatory decision-making process is to lead the analysis from the bottom up, i.e. from those (potentially) affected by the implementation of the technology.

In reference to this problem, Kaiser et al. (2007) developed a testing framework to compare a top-down ethical matrix (with facilitator or specialist defined principles) against a bottom-up (participant negotiated principles) matrix with lay participants. In the top-down workshop nine experts applied the matrix to discuss key issues raised by the development of GM fish. Broadly speaking, the experts concluded that the main problems with matrix were based upon the time constraints for discussion, the limitations of the knowledge of the participants and the requirement for a broader range of stakeholders to be involved in discussion particularly those with ‘complementary backgrounds’. In written feedback however, “all participants believed the use of the Ethical Matrix helped the process” (Kaiser et al. 2007). The researchers also concluded that the workshop findings reinforced the perception that expert groups prefer to work with a top-down approach to implementing the EM. In contrast, their bottom-up approach involved less explicit facilitator guidance; deferring where appropriate to the majority views of the (usually) lay participants in specifying the principles and conducting ethical deliberation. The matrix was initially applied with the standard four principles (with ‘Well-being’ specified separately as ‘Increased Benefits’ and Reduced Harm, alongside ‘Autonomy’, and ‘Fairness’). Participants then translated these principles into specifications for the interest groups and, following group discussion, ‘Autonomy’ was modified and ‘Dignity’ was subsequently used in the matrix. The participants also added additional stakeholders to the original list. Some argued for the inclusion of ‘future generations’ as a stakeholder group, although it was agreed that these considerations could be included under a ‘Consumer’ group. Others perceived ‘Research and Knowledge Production’ to be an important issue. As a result of this dis-

cussion, an additional stakeholder group, ‘Research Community’, was added to the matrix making a total of five (all from Kaiser et al. 2007).

The framing of the ethical debate through the predefined choice of principles by specialists or expert ethicists and their subsequent deliberation in the top-down (classical) EM is controversial for participatory decision-making processes, as this could potentially lead to criticisms of techno-centrism; albeit due to ethical rather than techno-scientific framing of the decision-problem. The bottom-up EM would therefore be preferable, although considerable ambiguity remains around how the principles themselves are chosen and how one set of principles is preferred to others. The justification of the choice of principles is an important meta-ethical concern. Unfortunately, the matrix lacks a specific mechanism for justification of principle selection and thus another tool is required for this purpose.

The EM’s standard set of ethical principles are grounded in the dominant ‘Western’ themes of moral philosophy, originally designed to maximise the breadth of ethical debate. However, the terminology used to categorise these philosophical traditions as principles is itself open to question and the difficulty in translating this into meaningful deliberative discourse lies in the interpretation of the principles themselves. For example, ‘Autonomy’ could conceivably refer to rights, duties, self-determination, liberty, freedom from coercion and personal responsibility. It could also refer to the decision-making capacities of individuals, or the relationship between intentional agents and the constraints of societal institutions. Similarly, wellbeing can be interpreted on a variety of different levels, from the individual, communitarian, societal, or state levels. Justice could refer to legal processes of compensation, legal rights or political enforcement as well as Rawlsian, Hobbesian, Socratic or Aristotelian philosophical traditions. Although the matrix could be used as the means to elicit such discussions, it still lacks a mechanism for visually (and conceptually) clarifying different meanings – potentially causing confusion for both matrix users, and third parties evaluators of matrix-centred discussions.

One solution may be to stipulate precise principle definitions. Without this, the interpretation of each word as representing a broader theoretical category creates internal inconsistencies and potential conflict among stakeholder-participants using the EM, rendering a ‘one-size fits all’ ethical issue per stakeholder/ principle a rather limited analysis. The ethical impacts of different stakeholder groups are matched up to a single universal issue, so much information and ethical tension is lost (at the very least in the recording process) in the name of simplicity and keeping the matrix small enough to be a practicable tool.

### ***4.3.3 Conclusions to the Ethical Matrix***

The EM has been used to address the challenge of ethical deliberation in a variety of technological decision-making contexts. Despite its popularity however, some



significant problems remain for its implementation as a deliberative decision-support tool in a process of PTA. The first significant critique stems from the inherent constraint of the 3x4 (or 4x4) design. This feature aids simplification and structuring of ethical discussions but also limits opportunities for creative problem solving outside of the matrix's pre-defined principle and stakeholder categories. The trade-off between free-flowing discussion and idea generation and structure and transparency is a persistent challenge for deliberative and inclusionary processes. To borrow Stirling's (2004) terminology, the creative problem-solving and idea generation aspects of participatory-deliberative methods (opening up) requires reining in at some point in order to 'close down' deliberation and reach conclusions.

Mephram (2005) argues that basically, the matrix represents a checklist of concerns structured around ethical theory, and at best, allows for the stimulation of structured ethical debate from a range of perspectives. To open up decision-making, effective bottom-up deliberation is necessary: participant control and ownership of the process mitigates the aforementioned problems that expert-ethicist centred analysis brings. A top-down matrix cannot support deliberation in this capacity. If the supposedly 'correct' values are prescribed prior to the engagement process (including the inherent Western philosophical bias of the pre-defined principles) then the bottom-up nature of deliberation is removed. With this in mind, bottom-up deliberation with participant ascribed principles is required. In spite of this, four problems remain.

Firstly, although it is argued here that bottom-up principle and stakeholder selection is appropriate, a further tool is necessary in order to achieve this in a transparent and meta-ethically justified manner. Secondly, the range of principles and stakeholders offered by the matrix is comparatively small. A far greater range of stakeholders and principles would be needed to alleviate the inherent bias in the model generated by such a small selection. The identification and display of such a narrow set of principled perspectives and stakeholder groups could have two outcomes. It may lead to participant conflict over those groups that were chosen to be included in the matrix and those that weren't – a problem that may simply lead to a redrawing of a larger matrix with more representative groups. More significantly, important stakeholder groups absent from the matrix may be overlooked because they were not on the deliberative agenda, thus precluding them from informed discussion. Thirdly, the matrix structure frames the deliberative agenda through inclusion and exclusion of certain groups. Thus, a meta-ethically justified process for the selection of stakeholders is necessary - a mapping device for identifying actors and the relationships between them. This process may take longer than simply making the matrix much bigger and spending the extra time filling in all the cells, although the selection of these inputs to the matrix is itself a deliberative process that requires structure, and hence deserves a facilitation tool in its own right. Fourthly, the matrix in its current form also lacks suitable deliberative mechanisms for closing-down ethical decision-support processes. In a closing-down phase the aim is to instrumentally assist policy making by, "cutting through the messy, intractable and conflict-prone diversity of interests and perspectives to develop a clear, authoritative, prescriptive recommendation to inform decisions" (Stirling 2004).

In a revision of the matrix, Mepham includes a weighting mechanism for ethical evaluation, separating positive and negative ethical impacts where a score is applied according to whether the principle is respected or infringed; weighted by scoring along a Likert-type scale, i.e. -2 (strongly infringe a principle) to +2 (strongly respect a principle). He argues that scoring perceived ethical impacts on a numerical scale may serve as a means of establishing relative perceptions, but the framework should not be viewed as a decision model. Indeed as Whiting (2004) argues, "...depending on the weighting given to various cells in the matrix almost any ethical evaluation can be supported." Schroeder and Palmer (2003) highlight that simply counting the numbers of infringed and upheld principles has in itself an inherent utilitarian bias (thus procedures like the one Gamborg [2002] suggests, inherently prioritise the ethical values of the many over the few). Also weighting criteria based upon a hierarchy of principles are equally problematic as they contradict pluralistic ethical deliberation by arbitrarily prioritising certain ethical principles over others. In the absence of reliable weighting criteria and hence a closing down mechanism for evaluation, summary and prescription, ethical decision-making remains reliant upon the competency of the users' moral judgement, so greater clarification and structured deliberation around conflicting moral judgements is necessary.

#### 4.4 The Ethical Grid

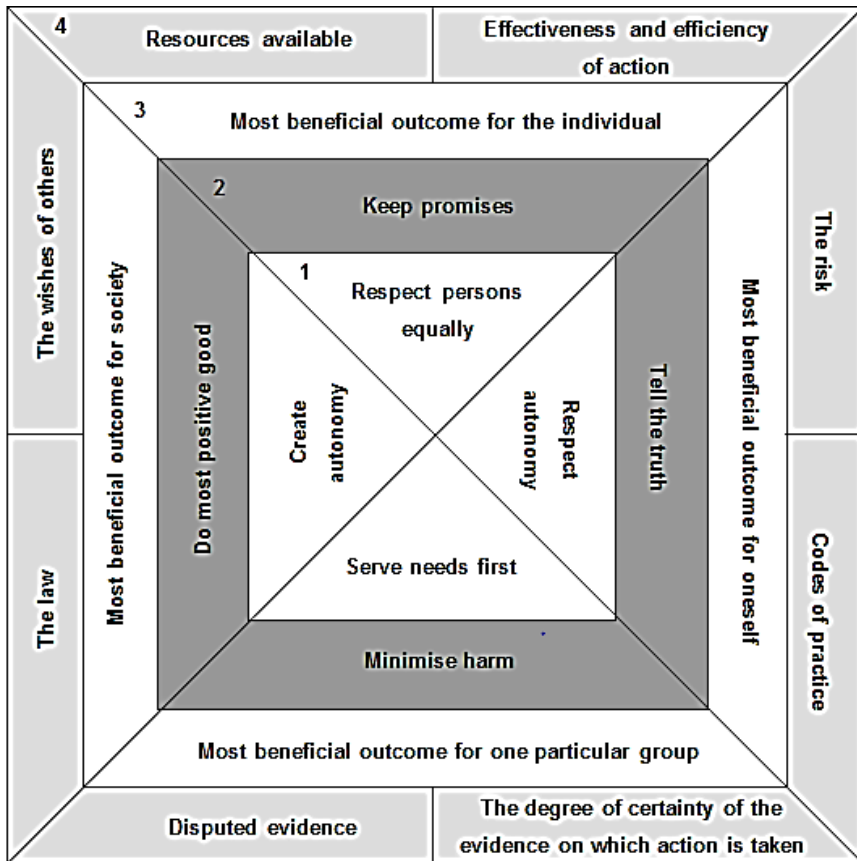
The second ethical tool, labelled the Ethical Grid (EG), is presented in David Seedhouse's book 'Ethics: the Heart of Health Care' (Seedhouse 1988; Seedhouse 1998). Seedhouse argues that the abstract philosophy presented by Western normative ethics is largely inappropriate for the decision-making realities of healthcare practice. The EG is designed to provide down-to-earth guidance for individuals to analyse ethical problems for themselves (Seedhouse 1998) and is presented as an ethical 'tool' in a fairly literal sense. Seedhouse uses the analogy of a spade; like a good gardener the 'grid user' understands the importance of keeping the tools clean and sharp, and understands when it is appropriate to use it (ibid). Elsewhere he states that "like a hammer or screwdriver used competently, it can help make certain tasks easier, but it cannot direct the tasks nor can it help decide which tasks are the most important. The grid can enhance deliberation – it can throw light into unseen corners and can suggest new avenues of thought – but it is not a substitute for personal judgement" (Seedhouse 1998).

The theoretical basis of Seedhouse's work divides the ethical realm into two distinct forms, which he labels Ethical A and Ethical B. Ethical A means ethical in the sense of having ethical content, and Ethical B in the sense of having a consistent view about what one ought to do in the social world. The Ethical A position appears to be grounded in a 'negative liberty' conception of ethics in the social world, whereby, as Thomas Hobbes (1651/1998) argued, "a free man is he that... is not hindered to do what he hath the will to do". Or which, as Isaiah Berlin argued in his 'Two Concepts of Liberty' essay, involves answering the question,

“What is the area within which the subject - a person or group of persons - is or should be left to do or be what he is able to do or be, without interference by other persons.” (Berlin 2002). Seedhouse applies negative liberty to ethics. In one analogy he highlights how actions such as twirling one’s hair or tapping on a desk is of no moral importance unless it is in a shared office and thus interferes with the work of others (Seedhouse 1998). The world of ‘Ethical A’ is defined socially - characterised by a complex world that is continually fraught with ethical dilemmas that require resolution by the actors that inhabit it. This contrasts with ‘Ethical B’ as it is by definition the realm of normative ethics; concerned with how an individual ought to act in social interrelationships. In the rather trivial case of someone tapping a desk, the move from Ethical A to Ethical B involves the realisation that such actions are irritating and thus influential. Unnecessarily irritating others at work is unfair to them, and therefore one’s ‘duty’ to stop is normatively motivated. ‘The ethical’ is, to Seedhouse, intrinsically linked to social interrelationships of individuals. The move from existing in a social world full of ethical dilemmas to participating in ethical problem solving and decision-making, therefore requires reflection about those everyday interactions between individuals.

The repeated reference to practical and everyday analogies in illustrating the realm of the ethical serves to underpin Seedhouse’s assertion that ethical behaviour is part of everyday existence and interaction; that it is not a sterile academic pursuit or thought experiment, but is in fact an intrinsic aspect of the conduct of everyday professional practice, as abstract and contested concepts of ethics lead to individuals ignoring or dismissing ethical issues and conflicts. Thus, the agenda of the EG is to allow (or perhaps more accurately persuade) health care professionals such as doctors, nurses, social workers etc, to take command of the realm of Ethical A by committing to the model of Ethical B, illustrated in the EG itself.

Seedhouse identifies a realm of ethics whereby the complexity of the moral world remains largely hidden from view; individuals perceive merely the ‘tip of the (moral) iceberg’ (1998) as Seedhouse puts it. The actor must stand upon the tip of this ‘iceberg’ constructed by Ethical A; at any given time or within any particular context only a portion of the full ethical issue is on view. One could argue that this is a critical realist, deep ontology of ethics; that requires the individual to maintain a reflexive understanding of ethical practice in a world where moral complexity cannot be fully observed. In answer to this, the grid represents a tool that allows the individual to uncover more of this complex ethical world and thus act to achieve the normative goals that are consistent with this social/ethical realm. The fundamental focus then becomes the idea of ‘doing’ ethics, through reflection, reasoning and application in everyday practice. It thus becomes practical ethics rather than applied ethics. The EG itself is designed primarily as a practical and visual tool that allows the practitioner to manipulate and reflect upon the issues presented in (seemingly) logical and rational order. Visually, the square grid divides the ethical concepts within into twenty boxes using concentric rings and bisecting lines. Each box contains a single ethical concept, so individual boxes can be self-contained and detachable, in the manner shown in figure 4.1 derived from (Seedhouse 1998).



**Fig. 4.1** The Ethical Grid

The EG is essentially an artificial device, so the separation of the concepts contained within each box is therefore also artificial. Seedhouse proposes that the implementation of the EG can take a number of different forms. It could be used to take each box in order and complete the whole grid in a set order, or else one could start at the centre and spiral outwards, with the central boxes as the most important the outer boxes the least important. Alternatively the most important from each layer could be used. The implication from this is that the grid is presented as a holistic and more importantly, a complete set of ethical principles to apply to health care. The fact that Seedhouse advocates a number of different processes for using the EG with no fixed order implies that the grid is presented as a robust and adaptable tool to apply in a variety of contexts. The visualisation of the EG is also flexible. It can be imagined as either a two or three dimensional construct according to the will of the user. It can be visualised as a four sided pyramid (or constructed as such as a three-dimensional model), and thus each side can be considered in turn, although Seedhouse asserts that there is no special

relationship between the boxes on any one side. Alternatively, in two dimensions it could be envisioned as “written on a piece of rubber”, with “an invisible cord at its centre”, which can, “pull the Grid either towards or away from the viewer” in order to keep the EG in mind and in view as a whole (Seedhouse 1998).

The potential visualisations of the grid allow a degree of flexibility, although this also creates a problem with regards to the complex task of recording how an ethical decision is made. To use a paper-and-pencil diagrammatic approach to the grid would require a constant redrawing and reshaping of the grid’s structure (which is inconvenient, impractical and would tend to dull the analytical sharpness of the grid as a tool). Similarly, physically constructed three-dimensional grids from wood, card, plastic etc, are flexible but cannot be recovered, i.e. physically recorded (which is an important aspect of deliberative methods, in that they should be explicable to third party representatives). Computer aided input and visual manipulation of a software-based grid could potentially alleviate this process (Machlaren 2001), and much of Seedhouse’s recent work on the EG has been to this effect. Computer mediated ethical decision-making has a number of possible merits in terms of resolving the practicality/recoverability problem. However, group deliberation is not always conducive to systematic data input into a computer system, particularly when simpler paper-and-pencil techniques are more readily available.

#### ***4.4.1 The Normative Theoretical Underpinnings of the Ethical Grid***

As shown in figure 4.1, the grid is a diagrammatic structure composed of four boxed layers, usually presented in different colours, though labelled here as 1-4. Its four coloured layers are used to illustrate the different approaches in conceiving what is ethical, by the dominant theories of normative ethics. Layer 1 (normally blue), the core of the EG, represents the rationale of Seedhouse’s conception of an ethical health care system and the normative basis upon which to conceptualise the meaning of ‘working for health’. What is interesting about layer 1 is that it represents a prescriptive central point – a set of primary principles upon which the foundation of Seedhouse’s conception of ethics stems; the cultural/moral framework by which he wishes to reconstruct the institution of the health service. This seems somewhat ironic given the vehement attack made that he makes on the principlist approach to medical ethics presented by Beauchamp and Childress.

Seedhouse critiques principlism as being adopted almost as if it were a mantra within the health care sector; individuals citing the four principles without critical reflection on behalf of the actors utilising such an approach. It is interesting that, given this rejection of principlism as being “nebulous” and as being “generally acceptable to well-heeled Western liberals [who] do no more than offer conclusions (a) open to wide interpretation and (b) acceptable only to those who agree with them in the first place” (Seedhouse 1998), Seedhouse then sees fit to place at the centre of his grid a layer of central principles “at least one [of which] must be used during deliberations” (ibid.: 39). It seems apparent therefore that a central set of

core principles is unavoidable within ethical decision making contexts, and the grid does not allow for the complete removal of a principle driven approach without “massive justification” (ibid.: 39). As in the case of the ethical matrix, if adapting the grid for use in the PTA context these central principles should be examined and kept or rejected on the basis of their relevance to the case in point (i.e. facility siting in a particular community), and to the overall internal coherence of the grid itself. Changing one set of principles may involve the augmentation or substitution of some or all of the boxes within the grid. Layer 2 (normally red) is representative of duties and motives. Its fundamental basis is upon the deontological position in normative ethical theory. The significance of this layer is to elicit the duties and obligations that are “implied by a commitment to health work” (ibid.: 42):

- Keep promises
- Tell the truth
- Minimise Harm
- Do most positive good

Seedhouse does not suggest that these duties are the only ones possible or that they should be binding, but argues against removing these obligations unless suitable justification is supplied. It would also be possible to supplement the duties presented for others, but similarly justification for the choice of different duties over those originally specified should be supplied. The difficulty that this presents is that the act of choosing the correct four duties to uphold in any given technology context (and whether it is significant to choose four in the first place) would itself be a complex deliberative process, something which will be examined further later in the chapter.

Layer 3 (normally green) is based upon a utilitarian perspective contrasting to the deontological grounding of the preceding layer 2. The utilitarian context is neatly (and rather conveniently it again appears) divided into 4 subcategories:

1. Most beneficial outcome for the individual
2. Most beneficial outcome for oneself
3. Most beneficial outcome for a particular group
4. Most beneficial outcome for society

Here the idea of ‘most beneficial outcome’ is applied to the differing layers of analysis: ‘the individual’, ‘the group’, or ‘society’ levels. This appears to equate roughly with examining the micro, meso and macro levels of the consequences of ethical action. The focus here is about setting health care commitments in terms of priorities, and the consideration of all affected parties. However such an analysis of grouping the affected parties into what effectively amounts to ‘you/me’, ‘them’, or ‘all of us’ would be rather simplistic for transferring to any participatory technology assessment context. It is widely recognised that priority setting is a contentious and politically fraught process, reflecting the complex interests and interactions of stakeholders (including intangible interests such as those of ‘future generations’ or ‘the environment’). Seedhouse’s somewhat over-simplified model

of affected parties would appear to bypass deliberation in favour of simple categorisation and hence is an inappropriate basis upon which to analyse the complex stakeholder and community relationships and interactions to be found the assessment of controversial technologies.

The final layer 4 of the EG is the realm of external considerations, those factors outside of the moral sphere that necessarily influence or impinge on decision-making. This layer includes the legal, political, social and wider institutional and interpersonal factors which, although they may all have a moral component, are still external to the ethical decision making process; in effect the ‘independent variables’ in the decision. This is important as decision-making on ethical grounds may be constrained by ethically neutral or non-negotiable factors such as regulatory mechanisms, policies and statutes. The negotiation between ethical and non-ethical factors is therefore worthy of deliberative evaluation in itself.

#### ***4.4.2 Critique of the Ethical Grid***

One of the primary criticisms of the grid is simply its constraint within four specific normative theoretical traditions. Like the ethical matrix, the four sided structure helps to simplify the model (conceptually and visually) but also severely limits the choice of principles and perspectives examined. The limit of four principles, four duties, four outcomes and eight external influences, places normative restrictions upon the user. Seedhouse’s selection of ethical criteria is essentially arbitrary, and relates to the stated intention to change the health care sector. The grid constrains the ethics of health care practice within a specific normative framework. The choice of principles is limited (in the first instance) to those that the originator deems relevant. Arguably the principles are suitable for the context in which they are supplied (i.e. in the face of a health care system that is moving towards a ‘management model’ of output delivery and patient services supplied as ‘goods’ rather than holistic patient care) and Seedhouse does leave the grid open to a different selection of principles (given adequate meta-ethical justification for doing so). However, unless the choice of ethical principles is meta-ethically justified by the practitioners themselves, the grid is not a ‘bottom-up’ ethical tool, in the sense that the normative ethical content is pre-defined (by the grid designer, even if principles are substituted for others) rather than user-defined, creating what is termed a ‘framing effect’ within the decision, which is in essence top-down.

One possible solution would be simply to leave the grid blank initially and use other forms of deliberative procedure to elicit the principles, duties, outcomes and externalities to be included. To do this, however, requires normative weighting or prioritising, highlighting a characteristic practical problem of this type of applied ethics. At some stage, the complexity of ethical inquiry must be reduced in order to create a tool which is ‘sharp’ and efficient. There is an inevitable trade-off between complexity and analytical depth on one hand, and simplicity and ease of use on the other.

One might also take issue with the ‘squareness’ of the 4,4,4,8 grid format. Such a format does not reflect a natural internal consistency between the ethical prin-

ciples presented, nor is it a formation that covers a full range of ethical positions; it is merely a diagrammatic shape into which concepts are arranged. This appears to be a design consideration for user simplicity rather than based upon philosophical justification. One might also question whether the numbers of spaces presented for each ethical theory category (deontology, consequentialism, etc...) is sufficient or whether more or less are called for, as no specific justification is presented in Seedhouse's work. For example, a triangular, pentagonal or even dodecahedral shape may be more appropriate, if more principles are considered relevant to the case in hand.

In short, the ethical grid has a number of features that are useful to the design of ethical tools for participatory technology assessment. The EG is designed primarily for individual users to reflect upon their behaviours in relation to broader ethical concepts and dilemmas. The divisions between Seedhouse's Ethical A and Ethical B show an interrelationship between the idea of act-deontology (whereby individuals must choose morally valid courses of actions) and an ontologically deep moral social world (where the ethical consequences of actions cannot be fully understood by individuals). Moral actors must also make decisions within the constraints of external social forces such as regulation, policy and law. In many respects this shares a commonality of approach with the aforementioned wide reflective equilibrium approach and thus deserves some consideration for application as a decision-support tool. The application of a tool designed primarily for use by individual practitioners in specific medical scenarios to a group-based decision-support process presents a number of challenges, however.

The EG was designed for health care practitioners dealing with individual patients. It therefore allows users to consider different theoretical perspectives and external considerations, but is not deliberative in the sense that it allows opportunity for group discussion and engagement around theory or issue selection. That said, the grid has design facets, notably its categorisation and colour-coding of ethical constructs, which may usefully inform further development of deliberative ethical tools. However, non-specialist participants with no formal ethics training may struggle to wield such conceptually weighty notions as act-deontology, utilitarianism or consequentialism. Simplifying the language and dividing and colour-coding ethical positions would seem likely therefore to be beneficial for facilitating ethics deliberation among groups of non-specialist citizens or stakeholders.

## 4.5 Ethical Delphi

The third tool that I consider is called the Ethical Delphi. It is an augmentation of the Delphi method developed within the RAND Corporation in the 1950s by researchers involved in a US Air Force project. Their original aim was the application of expert opinion to the selection – from the point of view of a Soviet strategic planner – of an optimal U.S. industrial target system, with a corresponding estimation of the number of atomic bombs required to reduce munitions output by a prescribed amount (Rowe and Wright 1999). The history of the method is



therefore steeped in technocratic assessment and decision-making. Since the 1950s the Delphi method has re-emerged as a method to combine knowledge and abilities of a diverse group of experts to evaluate developments that were deemed to lie outside traditional scientific assessments; either because decisions involved elements of judgement or dealt with uncertainties of various kinds (Millar 2007; Stewart 1987) and has been applied to a great range of decision and policy-making contexts (Hasson et al. 2000). It has been used for generating ideas, exploring future scenarios, collecting data and supporting decision-making in a range of contexts, from energy planning, to healthcare and social policy; and has been used to assist policy-making processes when information is incomplete or the validity of that information is in dispute (Adler and Ziglio 1996; Hill and Fowles 1975; Rauch 1979).

In practice, a Delphi obtains forecasts from a panel of independent experts over a period of two or more 'rounds' during which experts are asked to predict quantities. After each round, an administrator provides an anonymous summary of the experts' forecasts and their reasons for them. The process reaches a 'saturation point' when experts' forecasts have changed little between rounds. At saturation the process is stopped and the rounds are averaged. Proponents of the Delphi model suggest that it is based on well-researched principles and provides forecasts that are more accurate than those from unstructured groups (Rowe and Wright 1999, 2001). A key feature is the anonymity of the expert participants. The Delphi is structured around a virtual committee with anonymous and remote exchange of ideas, values and positions through a series of opinion exchanges. The participants convene as an ad hoc committee that will communicate remotely (most commonly now through electronic media) without ever meeting in person. In each successive round, the panel of participants is asked to comment upon the values and viewpoints expressed in the previous opinion exchange. The Ethical Delphi essentially elicits ethical issues, judgements and considerations that the expert panel deems are relevant and significant for the decision process. Where the Ethical Delphi and the classical Delphi method diverge, is that the ethical version does not seek overall consensus from its participants for future action or development, but instead serves to highlight areas of consensus and disagreement between participants and then map these to show the diversity of ethical values involved in complex technological decisions (Millar 2007; Millar et al. 2006). Millar et al (2007; 2006) define the context in which the Ethical Delphi approach would be useful:

- Expert input is required for policies under review or development
- Issues are uncertain, controversial and complex
- Judgement and weighing of arguments is essential
- Many and diverse research communities and stakeholders have concerns
- Outcomes from the process should have an impact on several issues, including future policy making
- There is need for a cross-sectoral scientific debate

The Ethical Delphi highlights the idea that deliberative methods should not be based on consensus-building alone. Indeed one must question if consensus is necessary in ethical deliberation at all. Given the plurality of values and ethical positions that may exist around an issue, consensus (especially in small, statistically non-representative groups) may serve little value. As I argue in the previous chapter, the consensus of ethical opinion within a group of experts cannot represent the diversity of public ethical values, and so to rely upon such consensus building within an ethical Delphi approach could again be criticised for being ethically technocratic.

### ***4.5.1 A Critique of the Ethical Delphi***

The first critique of the Ethical Delphi concerns the expert driven nature of the approach. The Delphi technique originated in the 1950's as a process for eliciting diverse expert opinions and weighting them to produce a consensual decision among those with competing or contrasting scientific and technical interests. In one sense it is a deliberative tool, although with sole input from experts and anonymity throughout the process, two key issues arise. Firstly, decision outcomes lack social 'robustness' in terms of how well they represent affected community groups or stakeholders. Secondly, outcomes are neither open nor transparent if decisions are made in a 'black box' away from public scrutiny.

The idea of having a series of rounds with anonymous input was designed originally to reduce the possibility of bias and political coercion within the discussion setting, principles that would be consonant with those which Habermas propounds as the basis of discourse ethics. In some respects this is unnecessary in the modern deliberative policy-making context. Stakeholders and communities under the deliberative turn, are openly and actively engaged in networks of interrelated communication practices about the issues under consideration. Although one advantage of the Delphi is that it can be done remotely, via post or electronically, the anonymity aspect is questionable in a well established expert and stakeholder network such as that which often exists around new technologies, where many stakeholders may be able to recognise the values and judgements expressed as belonging to one another due to the familiarity that results from sustained mutual engagement on these issues. Also within this research, the key goal is the active engagement with communities on their diverse values. As previously argued, scientists and ethical specialists have no particular moral authority or insight that differentiates their values as superior to those of affected stakeholders or citizens. Therefore the elicitation of expert opinion runs contrary to one of the central arguments of this book. Although the Ethical Delphi method has promise in broadening out purely technical and scientific debates to a greater level of values and viewpoints, it lacks the openness, transparency, and public-centred legitimacy recognised to be appropriate and necessary in this case.

## 4.6 Conclusions

The foregoing discussion has established that for a variety of reasons, the adoption of these three ethical tools is inappropriate for participatory technology assessment contexts. Other criticisms are philosophical. In both the ethical matrix and the ethical grid, questions are raised over the choices of the principles used; what, if anything, can justify the choice of the three or four principles presented over others? The answer is grounded in part by practical necessity, the inclusion of too many ethical principles or theory perspectives increases complexity and slows completion of the ethical assessment. Transposing the ethical matrix or grid from bioethics or health care ethics to new technology contexts (such as nuclear power or synthetic biology) would require a reassessment of the selected principles or theory perspectives. However, selecting specific principles over others requires meta-ethical justification, which these tools alone do not provide. As previously stated, the ethical principles employed are grounded in three dominant strands of what could be loosely termed Western philosophy: utilitarian consequentialism, Kantian deontology, and Rawlsian contract theory. Although accepting these principles may be justified on the basis of their familiarity for participants, designing new tools to incorporate a broader selection of principles or theoretical perspectives has the advantage of widening ethical assessment and making it more relevant to the case in hand and the differing perspectives of the stakeholders involved. The task is therefore to develop a tool that can cope with a greater breadth of ethical principles, without dulling the effectiveness of the tool in practical terms.

The primary concern with the both the EM and EG is the way in which the shape each tool constrains deliberation. In the grid for example, what value does constructing the tool as a series of layers in a bisected square add to the conceptual model used to tap into the complex world of social ethics? Seedhouse's original concept for an ethical tool was an interdependent web of ethical possibilities, with different regions and seemingly infinite routes through which one can travel to reach ethical conclusions (Seedhouse 1988). This was ultimately rejected because despite its elegance, it was deemed too complex and daunting for his students (and practitioners more generally) to use effectively. Nevertheless, Seedhouse's original vision is intriguing and suggestive of other possibilities. The problem of complexity and his reservations about such an interrelated approach may be overcome to a great extent if one turns to ethical deliberation in a group context. There already exists a wide repertoire of deliberative tools and techniques used to facilitate group interaction and co-operative problem solving. By building upon these existing tools and by using an iterative research design to test and reshape the process in light of experience, a pragmatic trial-and-error method may yield a more elegant and complex system of ethical deliberation. An approach such as this may better reflect Seedhouse's insight into the interrelated nature of the ethical world in a simpler and more transparent way. The remaining chapters within this section report upon the development of such a model, and the final section of this book illustrates its application.

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