

Chapter 12

Genetics, freedom
and human dignity



Genetics, freedom and human dignity

- 12.1 Although the reviews of the evidence in Chapters 7–10 indicate that very little is yet known about particular genetic factors that influence behaviour in the normal range, there can be no doubt that genes do make some contribution to behavioural traits, including fundamental aspects of human character. Since people do not choose their genes, and are therefore not responsible for them, it seems to follow that they are not responsible for these aspects of their character. But if this is so, then how far are they responsible for themselves at all? Does research in behavioural genetics undermine the normal sense of responsibility?
- 12.2 This sense of responsibility is not just a matter of legal concern. (This aspect of responsibility is discussed in Chapter 14.) Perhaps more importantly, it is an essential ingredient in the conception of human dignity, in the presumption that one is a person whose actions, thoughts and concerns are worthy of intrinsic respect, because they have been chosen, organised and guided in a way which makes sense from a distinctively individual point of view. If it turns out to be an illusion to suppose that people are responsible for themselves, then their actions and thoughts do not belong together as part of the meaningful life of an individual; a moral subject. In which case, one of the most fundamental reasons which people have for treating each other as worthy of respect would have been undermined.
- 12.3 This potential of research in behavioural genetics to undermine the way in which we think of ourselves can be contrasted with the implications of discoveries in genetic research as it relates to disease and disorder. In the latter case, research has established that, for example, some people may have a genetic predisposition to breast cancer. Finding out that one is affected in this way, however distressing, need not undermine one's sense of one's own identity. By contrast, what is suggested by research in behavioural genetics is that aspects of an individual's character, one's personal identity, may have a genetic basis. Thus, whereas in the case of disease and disorder, it is easy to differentiate oneself from that to which one is genetically predisposed, in the case of behaviour, it appears that one cannot do likewise; there is no deeper self which is unaffected by one's genes.
- 12.4 It is important, nonetheless, to understand from the start that such anxieties should not be occasioned simply by the recognition that people start out their lives with different abilities and weaknesses. If 'Tuesday's child is full of grace' whereas 'Wednesday's child is full of woe', woeful Wednesday is likely to have a harder start to life than graceful Tuesday; but this does not of itself imply that the children will not develop into adults who are capable of taking responsibility for their own character. Unless she is very unlucky, woeful Wednesday should be able to control her depression, and graceful Tuesday will need to take care of his charms.
- 12.5 Thus, if it can be shown that behavioural genetics, properly understood, does not threaten the conception of a person as a rational being capable of taking responsibility for himself or herself in free action, then it ought to be possible to welcome the deeper understanding of the springs of human motivation which behavioural genetics promises, without feeling that there is thereby a threat to the inherent dignity of humanity. Therefore, in this chapter, we consider whether behavioural genetics does undermine our conceptions of personal identity and responsibility.

The material self

- 12.6 Before one can identify and discuss this issue properly it is necessary to set aside one traditional way of thinking about ourselves. One view regarding the implications of behavioural genetics is that the research undermines the notion of responsibility simply because it reveals the fact that many important motivations have a physical basis in genes. The assumption here is that responsibility and thus free will depend upon the ability to transcend all such physical conditions. This traditional conception of free will stems from the conception of a person as comprising a material (physical) body that is associated with an immaterial self which is revealed in consciousness and is, for each person, what they 'really' are. The suggestion is that even if one's physical body is a part of the natural world, the actions of the immaterial self are no part of this system. Instead they constitute a domain of freedom in which a person controls the course of their life.
- 12.7 This conception of free will is threatened by behavioural genetics in so far as it implies that (material) genes affect the motivations of the (immaterial) self. But in any case, this conception of free will is implausible. If the immaterial self's exercise of its freedom is to make any difference to the course of life, in other words, if mental states are to be causally effective, the immaterial self's acts have to make a difference to the bodily movements which occur whenever one does anything. But the hypothesis that the actions of an immaterial self can produce effects upon a material body is intrinsically mysterious: there is no coherent way of understanding how this is possible. Instead, it seems inescapable that the causes of change in the material world must themselves be, in some respect, material. Hence the only tenable understanding of human freedom is one which does not postulate an immaterial self as the only really free agent.
- 12.8 It is worth observing that this hypothesis of a free immaterial self is not an essential ingredient of religious conceptions of human life. On the contrary, the doctrine of incarnation is a central feature of the Christian faith, including the thesis that the 'Word' (human thoughts, feelings, motivations and so on) really became 'flesh', that is, material. For this reason, orthodox Christianity has also always maintained that life after death requires the resurrection of a body.¹ Thus, there is no essential conflict at this point between a material view of the world and Christianity.²
- 12.9 It is difficult to characterise briefly the attitude of other religions concerning this issue of the immaterial self. Belief in the resurrection of the dead arose in late second-temple Judaism (see *Daniel* 12:2), but there have been many ways in which resurrection has been understood in Judaism, as in Christianity. One especially influential view was that of the medieval Jewish philosopher Maimonides.³ In his *Guide to the Perplexed*, Maimonides treated material existence as a necessary stage in the soul's liberation from sin through suffering, so that immortality is achieved when the soul becomes purely rational and thereby immaterial. This transformational conception of human existence, from a material sinful life to an immaterial pure afterlife, is also to be found in Islam. It fits readily within a neo-Platonist conception of the self as essentially immaterial but 'imprisoned' in a

¹ Cullman, O. (1958). *Immortality of the Soul or Resurrection of the Dead?* London: Epworth; Polkinghorne, J. (1994). *The Faith of a Physicist: Reflections of a Bottom-up Thinker*. Princeton, NJ: Princeton University Press.

² The Christian tradition has also included thinkers with neo-Platonist views more sympathetic to an immaterialist position, but their positions have generally been regarded as heterodox (if not downright heretical).

³ Kellner, M. (1990). *Maimonides on Human Perfection*. Atlanta, GA: Scholars Press.

material body during earthly life; but Islamic thought was also much influenced by Aristotle's thesis that the soul is the 'form' of the body, a thesis which cannot be readily combined with a conception of immaterial existence after death. Different Islamic thinkers resolve this tension in different ways: Ibn Sina (Avicenna) rejected the Aristotelian position in favour of a neo-Platonist conception of the soul. His position was then criticised by al-Ghazali, who insisted on the importance of physical resurrection, since only a physical being can be punished for sin. Finally Ibn Rushd (Averroes) returned to an Aristotelian position while allowing that we can gain a kind of immortality as we lose our individuality in universal knowledge.⁴ These debates show the difficulty inherent in the conception of an immaterial personal existence, and similar tensions arise in Eastern religions in the context of doctrines of reincarnation, karma and nirvana. But although these doctrines imply the possibility of a form of immaterial existence, their theoretical context is not the same as that of Western religions and metaphysics, so the question of whether they also permit a materialist conception of the self is a complex one which cannot be pursued here.⁵

Determinism and fatalism

- 12.10 One common ground for the view that genetics undermines responsibility for oneself is the claim that genetics is a deterministic theory. This claim can be interpreted in many ways, but in the present context it can be taken as the hypothesis that the laws of genetics show that an individual's genotype determines an important range of facts concerning his or her life, including facts about a range of fundamental human abilities and dispositions.
- 12.11 In thinking about this position, it is useful to start from a thesis often associated with deterministic conceptions of human life, namely, fatalism. Fatalism is the thesis that that which is determined is 'fated': in other words, that it will take place whatever one chooses or attempts to do. Traditionally, fatalism was associated with myths concerning the power of gods over human life.⁶ These myths are no longer believed, but fatalist language is still used to describe inescapable aspects of life, as when one says that everyone is 'fated' to die. In a similar way, fatalist language can be used to express the view that genetic discoveries imply that significant aspects of life are inescapably fixed by the identity of one's genes: as James Watson has put it, 'our fate is in our genes'.⁷
- 12.12 A distinct thesis is that of determinism, which, in this context, is the view that what we choose to do is determined by factors outside our control. Non-fatalist determinists allow that an individual's choice makes a difference to the course of his or her life, but hold that his choice has itself been determined. This is different from the fatalist thesis because it means that our choices do play a causal role, whereas the fatalist believes that future events will take place regardless of what we choose. Nonetheless, many determinists are also fatalists. This combination is particularly relevant here since, fatalism is clearly incompatible with the conception of ourselves as responsible moral agents.

⁴ Nasr, O. & Leaman, O., editors. (1996). *History of Islamic Philosophy*. London: Routledge.

⁵ See for example Collins, S. (1982). *Selfless Persons*. Cambridge: Cambridge University Press; Flaherty, W. D., editor. (1980). *Karma and Rebirth in Classical Indian Traditions*. Berkeley, CA: University of California Press.

⁶ For example, according to Greek myth, Apollo decreed that Oedipus, the son of Laius, would kill his father and marry his mother. Even though Laius, when told of this decree, attempted to avert his fate by arranging to have Oedipus killed as an infant, the myth recounts that Oedipus' life was saved and that he went on, unknowingly, to fulfil Apollo's decree.

⁷ Jaroff, L. (1989). The Gene Hunt. *Time Magazine* March 20.

12.13 If it were true that genes have inescapable implications concerning the later course of life, this fatalist language would be appropriate. But it is far from evident that these implications really are inescapable. In the case of some diseases, this is, in fact, the case. For example, those with the mutant allele responsible for Huntington's disease are indeed fated to develop this condition, although this is fortunately a rare condition. In the case of most diseases, however, genetic mutations lead only to a predisposition, or risk, of developing a condition. Moreover, there are generally also courses of action (such as a change of diet or lifestyle) which those diagnosed as being at risk can pursue in order to lessen the chance of their actually developing the condition in question. So these cases, which are overwhelmingly the most common, are not cases in which talk of fatalism is appropriate. Phenylketonuria (PKU) is a good case in point. This is caused by a recessive allele of the PAH gene⁸ on chromosome 12 and is associated with serious mental retardation. It turns out that this association depends on following a normal diet. Once someone identified (soon after birth, through a blood test) as carrying the two recessive alleles adopts a diet low in the amino acid phenylalanine, this association is broken and the person concerned can develop relatively normally.

12.14 It is, then, plain that understanding the effects of our genes in the case of disease does not lead us to fatalism. In the case of behaviour, the reviews of the evidence in Chapters 7–10 demonstrate that in so far as there are genetic influences on behaviour, these do not follow the very rare pattern exemplified by Huntington's disease. Instead these genetic influences involve predispositions to aggression, anxiety, low or high intelligence and so on. They do not imply that the chances of these predispositions being realised are unalterable. On the contrary, when the outcome is undesirable, their discovery provides an incentive for intervening to enable those with the predispositions to learn how to control and overcome them. Equally, when the outcome is desirable, those found to have the relevant predisposition may be motivated to make the most of their genetically given qualities.

12.15 Thus, the effect of one's genes is not to fix the future structure of life as a fate from which one cannot escape. Equally, the effect is not to fix the structure of one's character, the kind of person one is. Genes certainly contribute to the initial make-up of one's abilities and motivations. But it does not follow that one cannot do things which develop these abilities and alter one's motivations.

Freedom, possibility and rationality

12.16 Even if behavioural genetics is not an inherently fatalist doctrine, there remain other ways in which it can appear to pose a threat to the notion of a sense of responsibility. One familiar argument starts from the thesis that someone who acts of their own free will, and is therefore responsible for their actions, is someone who 'could have done otherwise'. If theories in behavioural genetics imply that there are important respects in which one could not have acted otherwise, namely, where one's actions were determined by genetic dispositions, it seems to follow that there is a conflict between responsibility for oneself on the one hand and behavioural genetics on the other.

12.17 In this case, the type of genetic determinism involved does not have to be the fatalist type already discussed and rejected (paragraphs 12.10–12.15). Instead, the more insidious suggestion is that although one's choices do make a difference to the course of one's life, the

⁸ Phenylalaninehydroxylase (PAH) gene.

fact that this capacity for choice, and the choices one makes, are themselves genetically determined in important respects shows that one is ultimately just a product of external forces, namely genes and the environment, and for this reason one lacks responsibility for oneself.

- 12.18 One obvious response to this argument is just to deny that behavioural genetics, and indeed genetics generally, support the deterministic hypothesis in question, since, as the earlier chapters show, genetic evidence is likely to generate only predictions of a statistical nature; for example, that A is twice as likely as B to behave in a particular way. But for two reasons this response is not satisfying by itself. First, as far as the implied threat to the notion of responsibility is concerned, it is not sufficient to dismiss the challenge to responsibility to say that genes are not entirely deterministic; for if the influence of early environment and other factors is taken into account, it may still be possible to get a considerably more robust, if not fully deterministic, connection between genetic and environmental factors, and one's behaviour. If this were true, genetics might turn out to be a major component in a deterministic science of behaviour. Secondly, it scarcely seems much of a defence of the notion of responsibility to rely on the presence of chance elements in the processes of human life. Responsible conduct seems even less like a merely chance occurrence than a determined course of events.
- 12.19 A much better response to the argument above is that it rests on an illusion: it invokes a conception of free will as being a capacity to act otherwise which is completely external to, and unconditioned by, one's natural constitution. Hence it is the argument's starting-point which should be rejected: that someone who acts of their own free will is someone who could have acted otherwise. Instead, the sensible position to take is that one acts of one's own free will when, first, one's action is the outcome of one's choice, and, secondly, this choice is itself the outcome of one's deliberations regarding what to do. What matters as far as acting of one's own free will is concerned is the involvement of one's rational deliberations in the causation of one's actions, and not the existence, or not, of an abstract possibility of acting otherwise.
- 12.20 Thus, freedom of action requires that one's reasons play a causal role in what one does. Once this is properly understood the threat of determinism falls away as irrelevant and it is not necessary to pursue further the question as to how far behavioural genetics implies determinism. Instead, there is a different question that needs to be faced, namely whether an understanding of human life that accepts that genetic factors contribute to behavioural predispositions undermines the involvement of the reasoning of people in an explanation of their behaviour. In the next section, we consider three philosophical approaches to this question: eliminativism, functionalism and rationalism. Box 12.1 provides a short summary of the distinguishing features of each approach.

Eliminating rationality

- 12.21 One influential contemporary view to the effect that behavioural genetics undermines this conception of free will rests on the thesis that the understanding of human life that is provided by genetics and the neurocognitive sciences is incompatible with our everyday understanding of a person as a rational being, capable of thinking and acting for reasons. The incompatibility is supposed to arise from the fact that our ordinary understanding of thought and action involves an inescapable element of subjective, personal interpretation which cannot be combined with the objective, impersonal explanatory schemes of the natural sciences. For this reason, some philosophers have argued that this ordinary self-understanding is only a preliminary 'folk-psychology', to be progressively 'eliminated'

from descriptions of behaviour (and the rest of reality) as the neurocognitive sciences progress, in much the way in which 'folk-astronomical' references to sunrise and sunset linger on only as a harmless reminder of past belief, since we now know that the sun does not actually 'rise' or 'set'.⁹

12.22 This is not the place for a detailed critical appraisal of this eliminativist position; but two points can be made briefly concerning it. First, even if some element of subjectivity is essential for forming an initial understanding of others, it does not follow that the resulting understanding cannot be corrected and refined as further evidence is collected, until it becomes closer to the kind of objectivity that is characteristic of the natural sciences. Secondly, although there are areas of vagueness and imprecision in ordinary ways of understanding thought and action, it does not follow that behavioural genetics and other neurocognitive sciences provide ways of thinking which should displace this ordinary self-understanding. Instead, it is arguable that one should get used to the idea that human life just is vague and imprecise in some respects.

Accommodating rationality

12.23 The obvious alternative to the eliminativist position is the view that there is no incompatibility between the understanding of human life suggested by genetics and the neurocognitive sciences and the ordinary understanding of people as beings capable of thinking and acting for reasons. There are, however, two main ways in which this alternative has been developed; by supporters of functionalist and rationalist positions respectively. Supporters of a functionalist position argue that the ordinary psychological conceptions of free will and responsibility refer essentially to the roles of physical states of the brain. The detailed operations of these states are to be explained by the neurocognitive sciences in ways which largely tally with common sense beliefs. Thus, the functionalist argues that these scientific theories will eventually show how thoughts and motivations, the terms by which human life is normally understood, are 'realised', or implemented, within human beings.

12.24 Behavioural genetics fits into this functionalist position as a science which contributes to the difficult, but essential, task of characterising the basis, genetic and neural, of behavioural dispositions. Thus, for the functionalist, there is no incompatibility between the findings of behavioural genetics and the conception of oneself as a person capable of acting of one's own free will; on the contrary, the behavioural geneticist makes an essential contribution to understanding what it is about human beings that gives them this capacity.

12.25 A central feature of this functionalist position is that although the validity of rational explanations of thought and action is endorsed, any such explanation depends on the existence of connections at the level of the neural states which implement the thoughts and actions involved. Thus explanations of thought and action in which the agent's reasons play some part are themselves argued to be reducible to those branches of the neurosciences which do not recognise concepts such as 'reason', 'decision' and 'free will'. In other words, these ordinary concepts can be fully explained in terms of neuroscience.

12.26 It is this reductive thesis which is rejected by proponents of the rationalist position. According to the rationalist, the best ways of understanding those aspects of human life in

⁹ For a clear exposition of this position, see Stich, S. (1983). *From Folk Psychology to Cognitive Science*. Cambridge, MA: MIT.

which one is engaged as a rational subject and a free agent are to be found in explanations which are couched in terms of the implications of one's thoughts, feelings, decisions and so on. These explanations are connected to the explanations of such factors as limb movements, neural changes, and genetic predispositions, that are provided by sciences such as physiology, genetics and biochemistry. For the rationalist, behavioural genetics belongs here as a way of making some of these connections. But the rationalist denies that these connections bring with them the true explanation of behaviour; in other words, the suggestion that the exhaustive and exclusive explanation of what happens is to be found at the level of biochemistry.

- 12.27 In rejecting the functionalist position, rationalists agree with eliminativists that there is something distinctive about the ordinary understanding of thought and action. But rationalists disagree with eliminativists in thinking that the natural sciences alone provide a framework for understanding the world. Instead, rationalists argue that human life is normally best understood by reference to the thoughts and feelings of those involved in them, even if there is something inherently personal in this kind of understanding. Rationalists reject, however, the implication that this personal dimension in the ordinary understanding brings with it a 'subjective' dimension that is inherently defective when compared with the objectivity of the natural sciences. They argue that it is the characteristic mistake of those who are over-impressed by the natural sciences to think that a properly objective understanding can be arrived at only when it is framed in the impersonal concepts of the natural sciences.¹⁰
- 12.28 The resulting debate between functionalists and rationalists is a transformed, and much improved, version of the old debates about determinism and free will. In effect, the question of reductionism (which can be seen as a question of explanation) replaces the old misguided question of determinism (which is concerned with causation). Functionalists hold that reductionism, that is, an explanation of behaviour in physical terms, is compatible with our ordinary understanding of free will and responsibility. Rationalists reject this claim and affirm that rational explanations of human affairs cannot be reduced to explanations in terms of the natural sciences (see Box 12.1).

Box 12.1: Folk psychology and natural science

The central point at issue between *eliminativists* (paragraphs 12.21–12.22), *functionalists* (paragraphs 12.23–12.25) and *rationalists* (paragraphs 12.26–12.27) concerns the relationship between our familiar or common-sense understanding of human thoughts and actions, which draws on an individual's reasons, beliefs and desires (and which is termed, in these debates, *folk psychology*) and the kinds of explanation provided by the natural sciences. Eliminativists hold that these two approaches are incompatible, and that eventually, folk psychology will be eliminated as genetics and the neurocognitive sciences develop. For example, today, our folk psychology explanations of behaviour refer to the beliefs we have. Eliminativists maintain that as cognitive science progresses, reference to beliefs will be replaced by reference to mental representations identified purely as internal states of the brain, lacking any reference to the world. Functionalists deny that there is any incompatibility here: they argue that beliefs may well turn out to be states of the brain, but

¹⁰ For a classic statement of a rationalist position of this kind, see Strawson, P. F. (1974). *Freedom and resentment*. In *Freedom and Resentment and Other Essays*. London: Methuen.

that does not show that our ordinary understanding of beliefs is incorrect. Thus, according to the functionalist, folk psychology needs to be supplemented in order that its explanations can be vindicated; but there is no reason to hold that this supplementation will lead to the radical undermining of folk psychology anticipated by the eliminativist. Finally, rationalists deny that folk psychology needs to be vindicated by being supplemented in this way. Like eliminativists, rationalists believe that folk psychology has distinctive features which imply that it cannot be reduced to the natural sciences. But, unlike eliminativists, rationalists hold that the distinctiveness of folk psychology is compatible with the natural sciences since they reject the assumption that everything can be explained within the framework of the natural sciences. One can summarise this debate as follows:

	Folk psychology provides a valid way of understanding human life	Folk psychology cannot be explained by, or reduced to, natural science	Everything about human life can be explained within the framework of the natural sciences
Eliminativists	Disagree	Agree	Agree
Functionalists	Agree	Disagree	Agree
Rationalists	Agree	Agree	Disagree

The implications of behavioural genetics

12.29 There is no denying that the scientific approach followed by most proponents of behavioural genetics fits more readily into a functionalist position than a rationalist one. Equally there is no denying that the ordinary sense of responsibility for oneself fits better with the rationalist position. Debate regarding the two positions continues, and it would be surprising if research in behavioural genetics alone yielded any decisive implications for this long-running debate between these two images of human beings.

12.30 It is nonetheless worth trying to clarify the significance, in other respects, of behavioural genetics for the understanding of human behaviour. Remarks such as that 'there is a significant genetic influence on divorce',¹¹ suggest that researchers in behavioural genetics see themselves as able to offer explanations of cultural phenomena such as divorce. But this is at best misleading: behavioural genetics is fundamentally a branch of biochemistry and biochemistry knows nothing of marriage and divorce. For this reason, sceptics argue that behavioural genetics can have little significant to say about human life, since most of what matters is culturally defined, and biochemistry says nothing directly about culture.¹²

¹¹ Muir, H. (2001). Divorce is written in the DNA. *New Scientist* 12 July. See also McGue, M. & Lykken, D. T. (1992). Genetic influence on divorce. *Psychol. Sci.* **3**, 368–73; Jockin, V. & McGue, M. (1996). Personality and the inheritance of divorce. *J. Pers. Soc. Psychol.* **71**, 288–99.

¹² See for example Rose, S. (1998). *Lifelines*. London: Penguin.

- 12.31 But this sceptical thesis is too strong. Here is a comparison: because physics says nothing directly about tables and chairs, there is nothing to be learnt from physics about how they are constructed. This inference is invalid. Physics has implications for the understanding of materials and structures, and these have obvious implications for the construction of tables and chairs. So if behavioural genetics can tell us about the 'materials' and 'structures' of human life, then it will have implications for the understanding of human life, including cultural phenomena about which it does not speak directly.
- 12.32 But what are the relevant 'materials' and 'structures'? One hypothesis, speculative but plausible, is that genes give rise to certain basic neural capacities which constitute an individual's 'intermediate phenotype' (see paragraph 3.15) and contribute (along with environmental conditions) to the formation of all the more specific abilities which constitute that individual's phenotype as characterised by reference to 'behaviour within the normal range'.
- 12.33 One area of special relevance to this hypothesis is the field of theories of personality. As the review of research on personality indicates (see Chapter 8), theories of personality postulate some basic traits: Eysenck's Three (Neuroticism, Introversion/ Extraversion, Psychoticism), or the Big Five (the first two of Eysenck's traits plus Conscientiousness, Openness and Agreeableness). The identity of these traits might well be thought to be too culturally-specific for their intended role (indeed, they sound like twentieth century versions of the old Four Humors), but it is not necessary here to assess how far a completely culturally neutral theory of personality is conceivable. For on any sensible view of the matter, both genes and the early environment play a part in fixing the parameters for personality traits; what is important in the present context is just that there is no inconsistency between this hypothesis and the thesis that social culture and individual rationality also shape one's life.
- 12.34 Indeed, the consistency of these two perspectives starts from the fact that rational thought and action presuppose abilities and capacities which are not themselves rationally grounded. Human action requires the capacity to appreciate reasons and the ability to act upon them, which are both antecedent to reason.¹³ But the abilities and personality traits with which one is endowed, as a result of one's genes and one's environment, are not unalterable. They normally include a capacity for self-development and self-criticism through the very understanding of oneself and the world which they themselves make possible. It is only by unconsciously adhering to a fatalist myth that behavioural genetics and the psychology of personality can be regarded as inherently undermining one's responsibility for one's own character.
- 12.35 This rather abstract argument may appear excessively complacent. For there are of course people with personality disorders which make it practically impossible for them, even with psychiatric help, to take much control of their lives. But the fact that in some cases people suffer from these disorders does not show that behavioural genetics implies that the same inability to exercise control is true of everyone. Moreover, this can be true whether the causes of personality disorder are primarily genetic (as appears to be the case for schizophrenia) or environmental (as in the case of victims of abuse during childhood).

¹³ One is, in Heidegger's phrase (Heidegger, M. (1927). *Sein und Zeit*. Verlag, Tübingen: M Niemayer), 'thrown' by one's genes and early environment into the space of reasons (Sellars, W. (1963). Empiricism and the philosophy of mind. In *Science, Perception and Reality*. London: Routledge and Kegan Paul. p. 169). One does not arrive there by one's own efforts.

Behavioural genetics, like medical science generally, implies that there are only differences of degree between 'illness' and 'health'. This implies that responsibility comes in degrees, but not that no one is truly responsible for their lives; differences in colour and taste are often, after all, 'only' differences of degree, but this does not show that differences of colour and taste are therefore unimportant.

12.36 It is impossible to read studies of identical twins without being impressed by the anecdotal tales of similarities and differences in the tastes and habits of those who were reared far apart.¹⁴ But these tales do not describe people who are mere puppets; instead they describe people whose lives exemplify the unique synthesis that heredity, environment and opportunities help one make of oneself. A person's character is not the fabled 'tabula rasa' (or blank sheet of paper). The writing on the paper starts with one's genes and early environment. But, to varying degrees, these early influences also enable one to write more, and crucially, to erase, for oneself.

Conclusion

12.37 The aspect of human dignity that has been central to this chapter is the conception of oneself as a free responsible agent, capable of acting for reasons and directing the course of one's life in accordance with one's own values and understanding of the world. This does not exhaust the ethical content of the conception of human dignity, but it is a central component of it: to argue that the conception of oneself and others as responsible individuals is misplaced would be to reject one of the main reasons we have for holding that each person's life is intrinsically valuable in so far as it expresses that person's own, unique, perspective.

12.38 It has been argued that when the issues are correctly understood, there is no inherent conflict between a greater understanding of genetic contributions to behaviour and due regard for human dignity. A non-reductive, rationalist, understanding of human freedom can coexist with recognition of the genetic influences on our human abilities, capacities and motivations, even though a reductive, functionalist, account fits more readily alongside the scientific perspective employed by behaviour geneticists. It is not necessary here to take a stand on this debate. But any sensible understanding of human freedom and dignity must allow for some starting-point in the development of the abilities which are central to this freedom and dignity. Behavioural genetics promises to elucidate this starting-point, and thereby contribute to the understanding of humanity. But it no more offers a complete theory of human behaviour than does any other single scientific discipline. Thus, there is no reason for adherents of behavioural genetics, or critics, to regard it as offering a radically new way of understanding human life which threatens to undermine the dignity of humanity. It complements, and does not displace, the familiar social sciences, the humanities and indeed our ordinary understanding of behaviour.

¹⁴ Segal, N. (2000). *Entwined Lives: Twins and What They Tell Us About Human Behavior*. New York: Plume.