

The heart of the new SACE

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The SACE Review proposes that a set of knowledge, skills and dispositions called capabilities should form the core of the new SACE. As the Review emphasises, there must be widespread, systematic research and discussion on the range and nature of the capabilities. The SACE Review suggests five capabilities as a basis for discussion. This paper is offered as a contribution to that discussion through an analysis of the knowledge, skills and dispositions to which the Review refers. The paper identifies and analyses a presupposition of all the capabilities, the capacity to reflect, and argues the importance of the development of that capacity for the developing human being.

Capabilities, knowledge, dispositions, reflection, hard core

INTRODUCTION

In March 2006 a review of the South Australian Certificate of Education (SACE) was presented to the Minister of Education for South Australia. Chapter 6 of the SACE Review commences with a sub-heading, 'Curriculum for a new SACE'. The introduction to that sub-section contains:

At the heart of the new SACE rests a set of 'Capabilities'. This term is used to refer to the generic knowledge, skills and dispositions that all young people will develop for their roles as citizens, workers and members of their local and global communities. There is a range of strategies that aims to embed the Capabilities in the formal curriculum and in processes for assessing and reporting students' learning. (Crafter et al., 2006, p.103)

If 'capabilities' are to form the core and foundation of the new curriculum, then, necessarily, there must be a careful and considered explanation of the concept. The SACE Review offers some initial explanation:

The Review Panel believes that the concept of *Capabilities* offers a powerful way to address the difficult balance between breadth and choice. It provides an approach that encourages breadth by treating student qualities seriously without diminishing the importance of other bodies of knowledge, or restricting choice. In short, the concept of capabilities is a new way of conceptualising the idea of core study. (Crafter et al., 2006, p.105)

and follows this with:

Capabilities are a combination of the knowledge, skills and dispositions that enable people to act in and on the world. They comprise the key ingredients for personal and collective agency. They are important indicators of what a person is able to do and be in different arenas (eg. work, civic and community life) and, thus, the extent to which citizens in any society possess certain capabilities is an important measure of the civic health of that society. Education is a primary site for the development of capabilities in a society, and so capabilities should be central to any curriculum. In summary, student

capabilities should encompass the personal attributes required to live, work and be an active citizen in a changing and globalising world. (Crafter et al., 2006, pp. 105-06)

This explanation is followed by the listing of five capabilities – communication, civic participation, health, well-being and personal development, work and knowledge work – with a short account of what may be involved in each.

At this point it should be stressed that the SACE Review does not put forward these capabilities as the definitive set of capabilities that are to form the core of the new curriculum. The Review makes this point emphatically:

There were many suggestions about the capabilities that might form the basis of a new SACE. (Crafter et al., 2006, p.106)

The five, which were set out with some explanatory detail, were only five of the possibilities:

The capabilities outlined above are intended to be a basis for discussion. It is important that there is ongoing professional and community discussion and systematic inquiry and research about the capabilities that are held to be important, and about the nature of capabilities and their place in the curriculum. (Crafter et al., 2006, p.107)

The point is made again in Recommendation 5:

The Review Panel recommends that:

Capabilities be placed at the heart of the new SACE, and that:

A comprehensive set of student Capabilities be developed through an extensive process of professional and community consultation, using as a basis the draft list identified in this Report.

A thorough research program be initiated to support the development, implementation and evaluation of Capabilities.

A comprehensive program of teacher professional development and community awareness be implemented in order to build professional knowledge so that Capabilities become a central part of the new SACE. (Crafter et al., 2006, p.108)

The consequence is that, at this point in time, there is no firm idea of the nature of the capabilities or their range. They are, however, the core of the new curriculum. The further consequence is that there cannot be and must not be any attempt to implement the SACE Review until and unless the nature of the capabilities has been examined. In this the SACE Review is being eminently reasonable. Too often educational reform is mooted and then rushed into without mature consideration. The SACE Review expects mature consideration to be given to its findings and this cannot be achieved in a short space of time. The matter can, justifiably, be put more strongly. The future of our schools, our teachers and our students is of moral concern for it affects their possible benefit and welfare. To attempt the implementation of the SACE Review's idea of the curriculum without careful and lengthy consideration is immoral.

This paper is offered as part of the necessary consideration of some elements of the listed capabilities.

CAPABILITIES

I start where Socrates and Confucius started and where anyone attempting a rational appraisal must start, with the meaning of what is proposed. What is meant by a 'capability'? This is not sheer pedantry. In the absence of understood meaning there is confusion and a babel of meaning.

On consulting the Macquarie Dictionary (MD) we learn that ‘capability’, the noun, means ‘the quality of being capable’, ‘a quality that can be developed or used;’. The Concise Oxford English Dictionary (COED) gives the meaning as ‘power or ability to do something’. The adjective ‘capable’ means, among other things, ‘having much intelligence, or ability; competent; efficient; able.’ (MD); ‘having the ability or quality necessary to do something’ (COED).

The definition in the SACE Review asserts that a capability refers to that which “enable[s] people to act in and on the world”. This says much the same as the COED. However, the SACE Review goes further and asserts that:

Capabilities are a combination of the knowledge, skills and dispositions that enable people to act in and on the world. (Crafter et al., 2006, p.105)

Is this an allowable definition of ordinary usage or is a new meaning being coined? If the latter, then clarity is essential; otherwise people, whether they be professionals or not, reading the SACE Review and seeking to implement it, at the worst, can be inhabiting different worlds. I say this in the sense of them having a different view of the world.

To be capable of something, in ordinary usage, means being able to do something. The something may be as diverse as riding a bicycle or solving quadratic equations. There is the implication that a level of skill is possessed. Skill levels exist on a continuum. It is possible to ride a bicycle well or poorly though there is a cut-off point below which the skill cannot be imputed. There is no cut-off point at the other end of the continuum, simply the recognition that it cannot be done any better. This continuum refers to the assessment of the skill not the performer. It is possible to say of someone that they ride the bicycle poorly but for their circumstances, well. Similarly, it is possible to say that the student is not very adept at solving quadratics but, for their circumstances, doing well. In normal usage we refer to the possession of such ability as ‘knowing how’.

Since Ryle (1949) it has been recognised that ‘knowing that’ should be distinguished from ‘knowing how’. The first refers to propositional knowledge, the second to a skill or ability. There are, of course, a variety of ways in which knowing is expressed in the English language – ‘knowing about, why, whether, where, and so on. It has been argued that all these are variants of ‘knowing that’ and ‘knowing how’. For instance, ‘knowing when’ is a temporal version of ‘knowing that’, and ‘knowing why’ is a combination of ‘knowing that’ and ‘knowing how’ (Gibbons, 1967; 1979, 2005; in press). There are similarities between ‘knowing how’ and ‘knowing that’. In both cases it is something which is learnt. In both cases standards apply. In both cases nothing is referred to which is being done or which is in the mind. They do not describe a state of performance at a given moment. They are both in fact capacity terms and indicate that the knower is capable of meeting certain criteria. The SACE Review in talking of capabilities has a point. However, though there are similarities, ‘knowing that’ cannot be assimilated to ‘knowing how’ or *vice versa*.

‘Knowing that’ is propositional knowledge and therefore implies that something is or is not the case. Either a person knows something or they do not. They may be mistaken in their belief that they know something and we might be mistaken in attributing knowledge to what they believe but there is no continuum. It is either the case or it is not.

We use knowing that and knowing how in conjunction all the time. In learning to ride a bicycle a person is seeking to acquire a skill. They have to have some notion of the criteria by which the skill is assessed or they will not know when they have made progress towards the acquisition of the skill. To set out to solve a quadratic equation necessitates some idea of the end result. In learning to ride a bicycle the acquisition of the skill may be assessed against two different sorts of criteria – those referring to the skill and those referring to the circumstances of the learner. In

learning to solve quadratics a criterion is successful solution, the personal circumstances of the solver are relevant to the difficulty of the quadratic.

The SACE Review talks of "knowledge and skill". In doing so it obscures both the distinction between 'knowing that' and 'knowing how' and the way in which they necessarily complement each other. As a result 'knowing why' and other usages of knowing are ignored. This is an important error. 'Knowing why', the grasp of an explanation and the ability to construct one, is surely crucial to education in any field.

KNOWLEDGE

The SACE Review makes a specific point with reference to 'knowing that':

Central to these capabilities is the ability to recognise that since knowledge is shaped by the world views and ideologies of those who produce and present it, it is problematic rather than given. (Crafter et al., 2006, p.106)

This is an extremely contentious assertion. The SACE Review appears to assert that knowledge is relative to circumstance, that knowledge is relative to the personal ideologies of those who produce it and this is reflected in the way in which they present it. It is the same view that found expression in the SACSA Framework. There is no doubt that world views and ideologies affect what people claim to count as knowledge just as there is no doubt that culture and power affect what is claimed to be knowledge. But this is not to say that what does count as knowledge is determined by world views, ideologies, power or culture. The view that the SACE Review appears to assert is one that is put forward on occasion but which very few would believe if they thought it through and which even those who propose it do not live by. Searle puts it well:

Typically when we act, think, or talk, we take for granted a certain way that our actions, thoughts, and talk relate to things outside us. I represent this as a set of statements, but that is misleading if it suggests that when we are actually talking, thinking, or otherwise acting, we are also holding a theory...when we act or think or talk in the following sorts of ways we take a lot for granted: when we hammer a nail, or order a takeout meal from a restaurant, or conduct an experiment, or wonder where to go on vacation, we take the following for granted: there exists a real world that is totally independent of human beings and of what they think or say about it, and statements about objects and states of affairs in that world are true or false depending on whether things in the world really are the way we say they are. (Searle, 2000, p. 12-13)

It may be rejoined that, for instance, science is about developing theoretical explanations of the world and is therefore always problematic. Certainly quantum physics is a theoretical view, Einstein produced a theory of relativity and so on. It cannot be argued from those examples that all science is theory. The earth is not flat and it spins and wobbles on its axis as it rotates around the sun. There is a force due to gravitation. The blood does circulate in our bodies. There are viruses. Photosynthesis does occur, and so on. The debate about quantum physics only becomes intelligible if there exists an independent reality to which it might refer. In another field, it may be argued that all history is a matter of interpretation but it must not be forgotten that it is the interpretation of events. There are a series of events that are presupposed. Eleanor of Aquitaine and Catherine the Great did exist at certain times. The 1914-18 War did occur. Whether we name those dates by the Gregorian, Persian or European calendar is irrelevant to the occurrence. The people and the events live or lived within a narrative context and without that context they are not understandable. Without that context we are unable to speculate, analyse and theorise. We know a

great deal and theorise and speculate about a great deal. The one does not eliminate the other. Theories advance the progress of knowledge.

There is an independent reality and the test for 'knowing that' is whether or not a proposition corresponds to that reality. Our ability to check that correspondence may be, and is, hampered by ideologies, culture and power, but this is not to say that we always fail or that we should cease to try. The very fact that we can recognise what may hamper us provides the possibility of taking measures to avoid the restraints. Learning is the acquisition of knowledge and the exercise of creative imagination within the constraints of evidence and reason and we can take measures to avoid devaluation.

The correspondence test against reality can, on occasion, be misused. For instance, it is common in South Australian schools to teach deductive geometry by asking students to draw and measure geometric figures. This being so, the following may occur. The sum of the internal angles of a Euclidean plane triangle is 180° . Students may be asked to draw a series of triangles of different shapes and then to measure the angles of those triangles. If and when the students produce the result of 180° , then this is said to confirm, support or prove the Euclidean proposition. This is nonsense. The sum of the angles of a Euclidean triangle is so by definition and deduction, experiments are irrelevant. It may be that teachers use the process to enable the students to grasp the idea. To do this they ignore the limitations of the measuring system and the students' ability to measure accurately. If they do not, then the students should record their results as $180^\circ \pm x^\circ$ where x represents their estimate of their inability to measure accurately. The situation is analogous to teachers using objects to enable their young charges to grasp $2 + 2 = 4$. Observing that two objects placed with another two objects makes four objects does not prove that $2 + 2 = 4$. Objectifying the ideas is sound teaching but there should be no notion of proof, confirmation or support put forward. If it is, then consider the damage that it leaves for later years and understanding.

Consequently, I would argue that the SACE Review in the passage quoted about the problematic nature of knowledge appears to be presenting a contentious view and, I would argue, a view to which very few adhere. This is an area that needs a great deal more examination and consideration.

DISPOSITIONS

The SACE Review adds to its account of capabilities the term 'dispositions'. A disposition is:

1. mental or moral constitution; turn of mind.
2. mental inclination; willingness.
3. physical inclination or tendency. (Macquarie Dictionary)

On this meaning, a disposition is an inclination or a tendency which may or may not be exercised. So it may be said of someone that he or she is inclined to be or disposed to be honest or reasonable and the implication is that the person chooses on this occasion to be honest or reasonable but may choose not to be so in the future. Most of the time though he or she is honest or reasonable. If that same person were said to be honest or reasonable in the sense of possessing the virtue of honesty or reasonableness, then he or she becomes the sort of person of whom it may be said that to be dishonest or unreasonable never occurs to him or her. Honesty or reasonableness has become part of whom he or she is. To possess the virtue of honesty or reasonableness is to be in the position of the exercise of that virtue being ingrained. This is not to suggest that temptation is not a possibility. It always is, except for the extraordinary.

Comte-Sponville (2003) is of the view that virtue has been thought to be an acquired disposition ever since Aristotle. Certainly Aristotle is translated as referring to dispositions when talking of the virtues (Bambrough, 1963, II 5). The SACE Review may then be said to be endorsing the

acquisition of various virtues. I take the view that virtues are not dispositions and I am doubtful that Aristotle, in the *Nicomachean Ethics*, was referring to dispositions as I understand them. Hursthouse takes the same view in denying that the virtues are tendencies or dispositions:

But this is not the Aristotelian concept. Despite a few awkward exceptions (friendship, gratitude), a virtue is generally held to be a character trait, a state of one's character. If you have the virtues of, say, generosity, honesty, and justice, generous, honest and just is the sort of person you are. (Hursthouse, 1999, p.11)

Consequently there are two points of view at least with regard to the term 'dispositions' in the SACE Review. That dispositions are inclinations not traits of character and the opposite view that they are, has been argued since Aristotle. I follow MacIntyre (1981; 1999) and Hursthouse (1999) in arguing that dispositions are not character traits (Gibbons, 2005; in press). However, it would seem that the SACE Review is treating dispositions both as character traits and as inclinations depending on the context. This treatment needs clarification for it makes a difference.

The character of a person is that sum of qualities that distinguishes one person from the next. It is what he or she is. A teacher may prepare a report on a student, which provides an extensive list of the student's achievements and abilities but, left at that, nothing has been said about who that student is and what may be expected of him or her apart from his or her ability to pass particular tests at a particular time. If now the teacher adds to the report that the student is honest and conscientious, loyal and trustworthy, then this starts to say something about the character of the student, that is, the person that the student is. And this last list is not a list of abilities or achievements or tendencies or dispositions but more a list of expectations.

To talk of a person's character is to talk of something deep-seated in that person. A change of character is a marked change which signifies a difference that can lead observers to say that he or she is no longer the same person. For this reason it is to be expected that reliable predictions can be made about the actions of persons where their character is known. And, in the reverse direction, actions can be explained by saying the action was in character. This element of consistency, of expectation, is brought out by the phrase that an action was 'out of character'. Children do not have character traits. They may well have personalities and part of that personality may be that they behave kindly towards other children but we do not think of them when very young as having character traits. These they acquire or not as they mature. Young adolescents for the most part appear to be still acquiring character traits. So they may oscillate wildly between recklessness and timidity, between compassion and indifference until maturity calms the swinging pendulum. Their characters are forming as they confront the world we live in and attempt to deal with it.

Why this excursion into character traits? The SACE Review in its outline of capabilities emphasises the importance of 'building identity' and developing the self. This is to be done through the acquisition of particular capabilities. Capabilities are defined in terms of knowledge, skill and dispositions. At this point the SACE Review is emphasising the development of character traits not dispositions. Moreover there is no indication of the character traits which should or might be developed. This is in contrast to the society in which the education system operates and in contrast to the history of the aims and curriculum of that education system. Education was once looked upon as aimed, in part, at the development of character and, in certain systems of education, there is still an emphatic and overt aim in that direction. I am thinking of the independent schools and the schools with a religious foundation. There is a necessary and close connection between the development of various character traits and what is taught and how it is taught.

On the other hand, the SACE Review talks of developing the inclination to participate in civic affairs, the inclination to act on their *rights and obligations as workers*. This is different from the development of character traits. If, however, it is meant to include both character traits and inclinations under the umbrella of dispositions then, it is essential that the distinctions are made and spelled out for teachers, students and parents. There is a great deal of work to be done in this area.

The SACE Review emphasises by the use of italics that students should acquire the capability to participate in society in **"reasoned, ethical, civil and respectful ways"**. If the use of these four terms is meant to indicate clear and important distinctions between them then a great deal of elaboration and argument is necessary. As it stands, it is possible to say with justification that there is no distinction to be made for to be civil and to show respect is to be both reasonable and ethical, and to be ethical demands the use of reason. Ethical terms occur throughout the elaboration of Capabilities in the SACE Review. It is well-known that there are a variety of ethical points of view and systematic approaches. Deontological and utilitarian approaches are just two. It may be guessed from what I have said that I incline to virtue ethics. These differences cannot be avoided and there has to be a great deal of argument and elaboration if value terms are to be included in the capabilities.

REFLECTION

The SACE Review in its elaboration of the 'Capabilities for knowledge work' lays stress on the development of:

...meta-cognitive capabilities such as *critical and reflective thinking and inquiry*. It also covers the important realm of *ethical thinking and reasoning*. (Crafter et al., 2006, p.106) (italics in the original)

The word 'reflection' and its derivatives tend to appear scattered like confetti throughout education documents. It is a classic example of an approval word. That is, its use guarantees that a good thing is being proposed. There is an aura of which the writers of documents make use. Rarely, if ever, is there any attempt to say what is meant by reflection. Referring to meta-cognitive capability serves no useful purpose except to introduce an element of psychological jargon what may or may not throw any light on what is meant by reflection in ordinary usage. I find nowhere in the SACE Review an indication of what is meant by reflection as we ordinarily use the word, and thus how it will be understood by students, teachers and parents. Yet it is clear that something extremely important is being said when the term is used.

What is meant by 'reflection'? It is a mistake to think of reason as the capacity that divides humans and the rest of the animal world. Our knowledge of the ways in which animals, particularly the primates, act, leads us to the conclusion that they can reason. If we were to view such behaviour in human beings, we would ascribe reason to them. Why should we not do the same with animals? My view is that it is reflection not reason that is the crucial capacity that is the distinctive human way of going about things. It therefore becomes extraordinarily important that we think carefully about the meaning of reflection for, without a doubt, it becomes crucial in the education of human beings.

Consider the phrase 'rational reflection'. There is here the notion of both reason and reflection and the implication is that they are distinct. They are both concerned with thought but this is not to say that there is no distinction between them. Reflection cannot take place without reason but reasoning can take place without reflection. The crux of the distinction is that in reflection we step back from our thought and review and evaluate. That is, reflection involves thinking about thinking or, as the behavioural sciences would have it, meta-cognition. However, I am wary of

accepting meta-cognition as a synonym for reflection. Meta-cognition is a word that operates within a particular type of inquiry and can be expected to have meanings associated with that inquiry, which are not associated with the ordinary language use of reflection. Meta-cognition has been given some attention in the field of educational psychology in recent years. I shall confine myself to ordinary language usage.

The distinction between reasoning and reflecting is evident in the English language. We may say that we dispute, disagree with or reject a line of reasoning, but it sounds odd to say the same of reflecting. We may say that we should reflect on something but to say the same of reasoning is odd. We reflect 'on' but reason 'about'. We 'check' reasoning but not reflection. Reasoning can be valid or invalid but not reflection, though it might be irrational. None of this divorces reasoning from reflection.

With reflection, in the first instance, we return to previous thinking or thoughts; we revisit them. This is a necessary precursor to giving attention to that past and reflecting on it. If I reflect on the past, I am recalling incidents that may or may not involve myself. I may make a judgement that a wrong move was made or a wrong direction taken. On the other hand, I may pinpoint a decision in the past with which I am pleased because it produced a successful outcome. I may, however, merely recall the past and, as it were, run it before my mind without making judgements but simply noting that it had occurred and observing the links in the chain of a personal narrative. This is recall which does not necessarily involve reflection. Is it possible to reflect on the future? The immediate but incorrect response is surely not, for the very root of the word 'reflection' is connected with the past. It may be said that I may reflect that certain possibilities may or may not arise in the future. I may reflect that this decision now will close or open a door in the future. But reflect on the future?

On this account, reflection is the giving of attention towards past thinking. To reflect is a transitive verb. There must be something to reflect upon, we do not simply reflect. And this can be further broken down into the giving of attention to:

- thinking and this may be in the distant past or that just gone;
- the content of that thinking; and
- the evaluation of that thinking.

In all of these the reflection may be concerned with reasons and reasoning.

But to confine the analysis of reflection to the past is a mistake. What is the point of reflection? We step back and consider and concentrate on the past in order to do a number of possible things, among them:

- to correct previous thinking or plans; and
- to revisit our plans so that we may plan further.

The first presupposes that something has gone awry and we need to rethink the present and the possible future. The second presupposes that we have completed or nearly completed previous plans and need to consider the next move. The introduction of the notion of planning may seem at odds with the assertion that reflection is concerned with the past. Any planning incorporates a future dimension. It also incorporates the ability to imagine the future. Reflection about past or current plans necessarily incorporates a time factor.

The first step in planning may be an attempt to establish the possibilities and evaluate them. For instance, when confronted with a situation the like of which we have not met before, we typically step back from the situation and make a number of possible moves. We may try to determine whether or not masterly inactivity is called for or if we must act. Both masterly inactivity, as the

phrase implies, and action, demand an assessment of the results – what happens if I do nothing? What happens if I do this? We speculate. If we decide to do something, then foresight and imagination are involved and planning. But foresight and imagination are also implied in masterly inactivity. We may attempt to find a suitable comparison between something from our past or the past of others for the situation which confronts us. This is a situation akin to finding an analogous theory in science to use in tackling a new problem. This is a reflective activity. Reflection is necessarily connected with the past and may be connected with the future. Planning necessarily involves reflection and is thus involved with both past and future. The element that takes reflection into the future is imagination. To give attention to the future we must imagine it. Once we have imagined it, then it is possible to reflect upon it. Though in saying this there is the appearance of a step-by-step process, and it is a mistake to think it so. Reflection is both retrospective and prospective.

In order to reflect we must concentrate, that is, we must single out and consider certain aspects of what we have thought or planned or done and we do this by focussing on those aspects to the exclusion of others that may be extraneous and irrelevant. Faced with what ought to be done we have to concentrate on the problem if we are to solve it. Simple attention will not do.

Consider some examples in order to unpack further the concept of reflection.

The deductively valid argument known as the *modus tollens* takes the form:

If A is true then so is B

B is not true

∴ A is not true

If now we argue;

If A is true then so is B

B is true

∴ A is true

We commit the logical fallacy of affirming the consequent. Popper (1980) brought to our attention the idea that we can only falsify a scientific hypothesis, we cannot prove it. Lakatos (1978) pointed out that we can do neither. The arguments are basic to the sciences and something that students have to grasp. Clearly these logical forms of argument are used everyday in our lives. If now we stand back and ponder them, reflect on them, it could well occur to us that these forms are presupposed in our language and thoughts about the world. In doing this we are not checking the argument for validity, we are not checking the argument for truth or falsity, we are removed from the chain of argument and reason and are contemplating what the structures might say about the nature of knowledge, the nature of the world and our place in it.

Hume argued that we cannot produce a valid argument by induction. That is, a valid argument cannot proceed from the particular to the general. If we examine an inductive argument then he seems to have a point. If, however, we reflect, we may be inclined to note that human beings disregard the logical niceties in this instance and take inductive arguments to be perfectly acceptable and reasonable every day of their lives. We accept, for instance, the regularity of physical phenomena such as the sun rising and setting.

In both of the above cases we demonstrate that we have a view of the world and what counts as reasonable, good argument and evidence. It is a view of what is to count as rationality.

Consider some more examples. The political ideology in England in the mid-nineteenth century was known as ‘political economy’.

Certain almost unshakeable, sincerely held economic beliefs were to underlie all governmental policy...And the greatest of these was that principle of political economy which maintained that you should interfere to the absolute minimum with the market forces of supply and demand because if you *did* so interfere, you endangered the natural flow by which supplies could reach the market. (Kee, 1982, p.82)

Implementing this principle resulted in a continued large export of food from Ireland to the continent of Europe during the famine years of 1845-49 and the control of any relief for fear of affecting the market. A million died.

There are causal links between the deaths and a number of factors. These links can be analysed biologically, politically, culturally and economically. Reasons can be given for the links. What happens if we stand back from the causal network that has been constructed and evaluate it? It might be said that one sense of reflection occurs when we stand back and examine the validity of the causal links. That is, we look at the evidence for causation and evaluate that evidence. We might, as a result, give weight to some causes over others. We might weigh the strength and weakness of the overall case and this might point the way to further avenues of investigation. However, it seems to me that it is a mistake to call this reflection. It is more properly called reasoning.

Reflection is the thinking in which reasoning is involved but which goes beyond reasoning. We can stand back and evaluate the acts and omissions of the actors in the historical drama. For instance, we might say that the ideology of 'political economy' was morally bankrupt and for the English government to act on the principles of 'political economy' in the way that they did was immoral. We might contrast the government's actions with the Christian virtues of charity and benevolence towards the poor and their needs, which the English government publicly professed. In this we are engaged in making judgements based on criteria that are embedded in our basic ontological and epistemological beliefs. This I would consider merits the term 'reflection'. To reflect is to ponder, to mull over. It is to go beyond the construction of an argument and the checking of that argument. It is to step back and evaluate, and, because the famine was concerned with what happened to and was done to human beings, the evaluation is fundamentally a moral evaluation. In making such an evaluation we measure what happened against what we think ought to have happened. This is to place the matter before criteria that are fundamental to our conception of the world in which we exist. Reflection goes beyond but includes reasoning and it takes place in the context of rationality.

Consider a different example. Crystals take regular forms. They have a certain symmetry. Fluorite is an octahedron. The snowflake crystal has a six-fold symmetry. Iceland spar is rhomboid. In chemistry the student may learn to recognise the various shapes and link them to their chemical composition. Crystals may be grown in classroom experiments. A wealth of detail may be acquired, arranged, analysed and catalogued. It is possible to view the analysis and the catalogue arrangements to see whether or not they have any validity. However to reflect on the appearance of crystals is to confront questions about reality. Why is it that the crystals have flat planes; why is that the fluorite crystal is an octahedron? Pursuing these questions may lead to the thought that the atoms of a crystal are governed by the properties of three-dimensional space. Repeated symmetry is only possible in certain ways. Crystals are natural kinds and the atoms of the crystal are examples of fundamental natural forces. Reflection leads us to considerations about the nature of the world in which we exist.

In order to reflect we must place the thought or the plan or the deed in context. All thoughts, plans and deeds have a history, a narrative which leads to their existence and without which we cannot understand fully the thought, plan or deed. This we need to bring into focus, to concentrate on, if

we are to reflect with the possibility of success. Consider $T = 2\pi\sqrt{l/g}$. There is no need to itemise the meanings of the symbols to some people. They recognise it as the equation describing the motion of the simple pendulum. Some of those, a smaller number than the original set, will recognise the equation as arising within a limited system. That is, they will recognise that there are specific limits set with regard to the arc of swing, friction, elasticity, and so on. A smaller number still will recognise it as part of a revolution in physical science. At what point might it be said that a person reflects on the equation? More than merely recalling the connection of the equation with the simple pendulum is required. More than recalling that if the equation is to be derived from a simple pendulum then limits must be imposed on the system. This is simply a matter of mathematical practice. I would suggest that reflection is the proper description for that which takes place when, with recall as a base, the equation and the physical phenomenon start to be seen in the revolutionary context of which they form a coherent part. It is at this point that we talk of ‘mulling over’, ‘pondering’, ‘appreciating’. This is not to suggest that recall is always a necessary base for reflection.

Elsewhere (Gibbons, 2005) I have argued that, following MacIntyre (1999), the capacity which may be distinctively human is expressed in at least four things:

- the ability to distance ourselves from our beliefs, decisions and actions both in the past and the present;
- the ability to evaluate our beliefs, decisions and actions;
- the ability to imagine and attempt to choose, which presupposes evaluation, our future; and,
- the ability to imagine, which presupposes evaluation, our past.

The four things above express the capacity to reflect. This is the capability, the capacity, with which the SACE Review should be most concerned. It would also be instructive to consider the kinship between the capacity to reflect and the concept which is crucial to the Confucian view of education, the evaluating mind (Munro 1969). The word ‘speculate’ illustrates these elements. The Macquarie Dictionary says that to speculate is:

to engage in thought or reflection, or meditate (oft. fol. by *on*, *upon* or a clause). 2. to indulge in conjectural thought.

Speculation in the above sense often begins with the query – what if? What if the earth moved round the sun; what if I were to ride on a beam of light looking back at a clock; what if the continents are floating and can move? Not all ‘what if’ questions lead to speculation. What if I switch off the electricity connection to this computer? It will shut down. The speculative queries are those which lead a person to question the basis on which he or she views reality. The speculative questions demand the exercise of the imagination. In this sense it becomes clear that speculation is the lifeblood of science. Indeed, it becomes clear that speculation is the lifeblood of all attempts to advance our knowledge.

The concept of ‘regret’ provides further illustration of reflection. We may regret the past, the present or the future. In regretting we always admit that things should have been and should be managed differently while at the same time admitting that this might not be possible. There is always evaluation and that evaluation is against what we conceive as the way the world ought to be. In regretting the past we recall what has happened, we imagine what might have been different and we evaluate what has occurred. In regretting the present we see how it has come to pass and how it may proceed. In regretting the future there is an element of helplessness in the face of what we see impending. To regret is a reflective process that requires reasoning, imagination and evaluation.

HARD CORE

The account given by Lakatos of the nature of science is, in my view, applicable to human beings and their relationship to each other and the world. Lakatos argued:

Newtonian science, for instance, is not simply a set of four conjectures – the three laws of mechanics and the law of gravitation. These four laws constitute only the “hard core” of the Newtonian Programme. But this hard core is tenaciously protected from refutation by a vast “protective belt” of auxiliary hypotheses. And, even more importantly, the research programme also has a “heuristic”, that is, a powerful problem-solving machinery, which, with the help of sophisticated mathematical techniques, digests anomalies and even turns them into positive evidence. (Lakatos, 1978, p.4)

We all develop a personal hard core that we defend tenaciously. Our personal hard core defines what is to count for us as acceptable argument, relevant evidence, and good reasons. That is, it defines for us what is to count as rationality. It may appear therefore that rationality is relative to the individual. However, it must be remembered that the rationality of the hard core is internal to it. The test for truth is the correspondence of that hard core to reality. It is therefore possible to recognise a personal hard core as being relative to the time and the culture of the individual while at the same time, hopefully, seeing it as a step along the road to understanding reality.

The hard core of beliefs of a culture define rationality for that culture and thus for the individuals within and part of that culture. The principle of political economy held by the English Government in 1846-50 can be classed as part of the hard core of beliefs against which proposed actions were measured and decided. The principle defined what was to count as reasonable, evidence and sound judgement in a particular area. The principle is an ontological and epistemological dictum.

The hard core of beliefs of an individual define for that individual what are to count as reasons, evidence and sound argument. Reflection and learning to reflect takes place in the context of the hard core. Rationality is only intelligible in the context of the ability to reflect and the hard core defines rationality. Consequently, we may say that there is a capacity to reflect which, for its exercise and development, requires a hard core of belief which is the basis of the ontological and epistemological beliefs of an individual. We start to differ, as far as we know, from the animals when we start to develop the capacity to stand back from our needs and desires and judge whether or not they are worthwhile. We reflect rather than simply reason. The initial notion of worthwhileness is with reference to what it is worthwhile for me to do, what it is best for me to desire. And this is assessed against my small world and my place and the place of others in that small world. The child growing up in a Confucian based culture in South East Asia develops a hard core which is, in part, significantly different from the hard core of a child growing up in an Anglo-Saxon culture. Consider, for instance, the contrast between the family centred Confucian based culture and the individualistic Anglo-Saxon culture. The concept of democracy in a Confucian based South East culture is family centred; in the United States it is seen in terms of Adam Smith’s justified self-interest. How does this sit with what the SACE Review says about the importance of democracy flourishing? What will count as reasons, evidence and sound argument will, in part, differ between them. I say ‘in part’ in the acknowledgement that their views of the world will not be totally different but will intersect. With development, this view of the world enlarges and the measure of what counts as worthwhile and rational enlarges and becomes more complex encompassing reflection on the past and consideration of the future. This is a process of education, some would say a crucial aim of education. The development of a reflective human being is not the development of, on the one hand, a capacity to reflect, and, on

the other hand, a hard core of ontological and epistemological beliefs. They are interdependent. The aim of both informal and formal education should be to develop both. The capacity to reflect is developed through encouraging the child to imagine, to speculate, to ponder, to evaluate. But there must be something on which and against which reflection takes place. The hard core is developed through the formal and informal processes by which children acquire their view of the world and their place in it. It is a mistake to think that the hard core is composed of empirical beliefs and moral principles. The human being is not that simple. Religion, myth and beliefs which are fervently held but for which there is no evidence may all be present. The 'Dreaming' of Australian Aboriginals plays a very real part in the hard core of those peoples. The Icelandic sagas still form part of the hard core of that culture (Smiley, 2000). Many cultures imbue in their peoples a long memory for past concerns and wrongs.

The hard core will be subject to attack either from others or from an individual's own observations of reality. The response to attack is the defence of auxiliary hypotheses. This is not to say that there can be no change in the hard core of a culture or a person. Clearly this can happen and does. History is witness to that.

The narrative of a human life is called upon when we reflect on whether or not this should have been done or believed or whether or not we should do this or that, believe this or that. Reflection here involves who the human being is and his or her stance to the world. Reflection in any practice, whether it is science, fishing or painting brings into play, for the reflecting human being, that human being's connection with and view of, the world of his or her existence. The examples of reflection above indicate that the attempt is to make and retain a coherent, consistent account of the world of our existence. It is to seek harmony.

What a human being needs to flourish is to develop a justifiable hard core, the capacity to reflect and a narrative context of the world in which they exist. This must be the prime objective of education both formal and informal, and it lies behind all the capabilities of the SACE Review if those capabilities are to be meaningful.

These thoughts on reflection have been an attempt to unpack what may be meant by the use of the term in the SACE Review. If nothing else, it has been demonstrated that the matter is complex. I would argue further that far too little attention is given to this favoured word, 'reflection', yet it is so distinctive of a flourishing human being¹. No sphere of our thought and action is complete without it. Certainly it lies behind everything that appears in all the capabilities that are named in the SACE Review. Without the capacity to reflect they are non-entities. So perhaps we need to think far more carefully and at length about what it is to reflect.

There are other issues in Chapter 6 of the SACE Review that should be addressed but which are not possible to pursue in the short space of this paper. As Recommendation 5 indicates, there is much to do. However, from the point of view of my research interests there is an interesting paragraph on p.107. This paragraph sets out the notion that subjects and disciplines are also the means by which broad capabilities are developed.

...capabilities are a higher-order outcome of the learning of subject or disciplinary knowledge and processes, but are not independent of such learning. Nor do they compete with subject knowledge. They are developed *through* subject knowledge, which continues to be important in its own right. The interplay between capabilities

¹ The arguments concerning what it is for a human being to flourish have developed from their statements by Confucius and Aristotle through to the work of Anscombe (1995), Foot (1978a; 1978b; 1978c; 1994; 1995), Hursthouse (1999), McDowell (1995) and MacIntyre (1981; 1988; 1990; 1991; 1994; 1999). My account (Gibbons, 2005; Gibbons, in press) relies on their work though they may not agree with some of my interpretations.

and disciplinary knowledge will be central to teaching and learning. (Crafter et al., 2006, p.107)

My research over the last four years into precisely this area (Gibbons, 2005; Gibbons, in press) convinces me of the importance of these propositions and the need to develop them thoroughly.

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