Personal reflection in medical education
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Chapter 7. Conclusions, Discussion and Perspectives

en zo waren er nog meer dingen
maar die waren niet onbegrijpelijk genoeg
om hier te noemen

– Rutger Kopland

Conclusions

The main conclusions are summarized in accordance with the sequence of the chapters.

Chapter 1. Introduction/assumptions/guiding principles/research questions:

1. The core subject of this thesis is ‘personal reflection’ in medical practice and education. ‘Personal reflection’ is distinguished from ‘scientific reflection’. Personal reflection is defined as: the careful exploration and appraisal of experience, thus clarifying and creating meaning for the benefit of balanced functioning, learning and development.
2. Balanced conduct of doctors is needed for good patient care, improvement of professional expertise, self-care and preservation of personal well-being.
3. For balanced conduct a ‘reflective equilibrium’ is needed. This entails the deliberate use of ‘scientific reflection’ and ‘personal reflection’.
4. Medical educators have distinct responsibilities with respect to the encouragement of scientific and personal reflection by medical students and doctors.
5. For effective educational encouragement a more precise understanding of the nature and function of personal reflection in health care practice is needed.

This view on personal reflection resulted in the following research issues:

1. Is it possible to make the rather abstract construct of personal reflection more concrete for medical educators who play an important role in the encouragement of reflection by students?
2. Is it possible to measure the personal reflection ability of medical students in a practical way?
3. What is the validity of an instrument measuring the construct of personal reflection?
4. Is experiential learning an effective educational method to encourage personal reflection?
5. What is the value of a more precise conceptual understanding of personal reflection for a definition of reflection as a competence?

Chapter 2. Visualizing reflection: the Float Model:

1. The important and rather abstract construct of reflection in medicine can be made concrete for educational purposes using the Float Model.
2. The Float Model can be used to distinguish and recognize the basic modes of reflection (scientific and personal reflection) and the need for each in creating balanced conduct. It can help to reveal blends of balanced and unbalanced reflection underneath the water, shaping profiles of reflective behaviour at the surface, and to structure observations and feedback.

Chapter 3. Measuring personal reflection: The Groningen Reflection Ability Scale (GRAS) and Chapter 4. Validation of the GRAS:

1. Personal reflection is an important construct in medicine that can be measured.
2. The ability to personal reflection can be measured with the Groningen Reflection Ability Scale (GRAS).
3. The GRAS is a practical measurement instrument which yields reliable data that contribute to valid inferences about the personal reflection ability of medical students and doctors, both at the individual and group levels. It is a one-dimensional scale, covering three relevant aspects of personal reflection: self-reflection, empathetic reflection and reflective communication. The 23 items on a 5-point Likert scale result in one GRAS score.
4. Whereas the instruments available are mainly focused on critical thinking concerned with well-defined clinical problems, the GRAS measures personal reflection, which focuses on important and multi-faceted problems in patient care, professional collaboration and development.
5. The GRAS can be used in combination with other measures, in order to capture the richness of reflection in medicine, both for practical and theoretical purposes.
6. Validation shows that the GRAS is positively associated with self-reflection, empathetic aspects, a need for complex thinking and an open-minded
attitude, and to a small extent with a tolerance of lack of structure and uncertainty.

Chapter 5. The effect of enhanced experiential learning on personal reflection:

1. There are indications that enhanced experiential learning (that is, offering authentic experience, supported participation in practice, a clear portfolio structure, a supportive mentor system, and appropriate assessment) has a positive effect on the development of the personal reflection ability of first-year undergraduate medical students, as measured with the GRAS.

Chapter 6. A conceptual framework for personal reflection in healthcare practice and education:

1. The multifaceted construct of reflection contains cognitive-emotional and meta-cognitive processes which have been frequently described both theoretically and empirically in the literature. We have distinguished the meta-cognitive processes occurring in ‘scientific reflection’ and ‘personal reflection’, as well as the operational cognitive-emotional processes occurring in ‘information processing’ which mainly concerns ‘determinative judgments’, and ‘sense making’ which mainly concerns ‘reflective judgments’.
2. Scientific reflection is mainly oriented towards testing the evidence of expert information processing which aims at the augmentation of determinative clinical judgment.
3. Personal reflection is mainly oriented towards clarifying the process of sense making which aims at the augmentation of reflective judgment.
4. Personal reflection is not an aim in itself and is not an alternative but a supplement to scientific reflection. The overall aim of the encouragement of personal reflection in education is to acquire and maintain the reflective equilibrium that is needed for balanced conduct in health care practice. The balanced conduct of doctors primarily benefits patient care, the development of expertise and inter-professional cooperation, but also self-care and doctors’ personal well-being.
5. Educational encouragement of reflection requires a definition of the reflection competence that must at least contain: the modes of ‘scientific reflection’ and ‘personal reflection’; purposeful attention towards ‘information processing’ and ‘sense making’; internal application (self-reflection, self inquiry) and external application (patients, family, colleagues) and the interaction between both.
Discussion

The major conclusions of the studies in this thesis are that personal reflection is vital for balanced conduct in medicine, it is a measurable and trainable professional quality, it can be made more concrete for educators, and effective encouragement is possible with enhanced experiential learning. The availability of a definition of reflection competence, based on a better understanding of the nature and function of scientific and personal reflection, is important for further educational development and research.

The main objections to these substantiated ideas and the interpretation of the conclusions which will be discussed, are:

- Personal reflection is neither necessary nor desirable in practice and education.
- Personal reflection and scientific reflection are not compatible.
- Personal reflection cannot be taught/learned because it is a matter of personality (state-trait discussion).

Personal reflection is neither necessary nor desirable in practice and education

Based on the literature and the studies in this thesis we have argued and illustrated that balanced conduct by doctors and other health care professionals is impossible without the purposeful use of personal reflection, mainly oriented towards sense making and reflective judgments, and used in conjunction with scientific reflection which is mainly oriented towards information processing and determinative judgments.

However, critical authors such as Mulroy (1999) find that reflection is neither necessary nor desirable, and argue that education in reflection is a step in the wrong direction. According to Mulroy, the difference between determinative judgment and reflective judgment is that with the latter the choice of concept is open. Reflective judgments are ‘soft’ – they are rarely wrong because one can use whatever rules or concepts that come to mind, and the details of a situation are limited by subjective selection. With determinative judgments, a set of rules or concepts is stipulated and applied to a particular situation – they are much ‘harder’, with less degree of freedom such that if the relevant details are not noticed then the judgment will be ‘wrong’. Connecting experiences to concepts and theories requires determinative judgments in particular. Based on this distinction Mulroy criticizes the ideology of reflection in education, which leads in his opinion to the
demise of determinative judgments. Clients or patients do not consult doctors, lawyers or mechanics for ‘reflective impressions’ but for determinate diagnoses. Thus, the main purpose of professional education is to develop the capacity to make accurate determinative judgments. Mulroy states that the encouragement of reflection by students and increasing their freedom by minimizing their determinative judgments is profoundly misguided (Mulroy, 1999).

Mulroy’s opinion (1999), and that of others such as the early advocates of EBM (Sackett et al., 1991), exemplifies the conviction that research-based propositional knowledge will ultimately replace traditional medicine and result in enhanced determinative judgments that make individual professional-personal experience, tacit knowledge and reflective judgment superfluous. Today this belief is nuanced, with EBM being used to augment rather than replace the individual clinical/professional/personal experience and understanding of basic disease mechanisms. It is accepted that evidence from research can be no more than one component of any clinical decision, among other key components such as the circumstances of the patient (as assessed through the expertise of the clinician) and the preferences of the patient (Haynes, 2002).

We agree that scientific reflection is a vital meta-component of medical expertise, but its predominance and misconception readily leads to the false claim that it is the only relevant mode of professional reflection. We consider personal reflection to be the crucial complementary mode of reflection. Using the conceptual differentiation of information processing and determinative judgment from sense making and reflective judgment we can explicate more precisely how scientific reflection and personal reflection are interrelated. Both are needed for reflective equilibrium as a prerequisite for balanced conduct.

The diagnostic process involves both determinative and reflective judgment. Expert information processing using determinative judgment entails a sequence of skillful acts through which specified signs and symptoms are brought under a disease category. Although it is often a sophisticated process it is also done in a relatively mechanical way. This expert activity, which is easily mistaken for the single sign of professional expertise, presupposes a process of sense making which also requires a sequence of skillful acts which often remain taken for granted. Through personal reflection one can raise awareness of and insight into this sense making side of the diagnostic process and professional conduct.
The encouragement of the ability of medical students to engage in personal reflection to the detriment of scientific reflection is a risk, a pitfall and a regression to pre-scientific medicine. This can easily occur when personal reflection and the personal-affective competences of doctors are advocated as morally imperative and as acceptable alternatives to scientific reflection, instrumental research-based propositional knowledge and skills. However, advocating EBM and scientific reflection as morally imperative to the detriment of personal reflection, individual professional experience and experience-based tacit knowledge is just as risky, leading to unbalanced conduct and poor patient care.

**Overcoming dichotomous thinking**

An explanation for why new insights concerning reflective professionalism are being accepted so slowly in health care practice and education despite the development of pluralistic views in these domains has to do with a persistent misconception about medical professional identity, dichotomously framed in terms of ‘hard/soft’, ‘determinative/reflective judgments’, ‘personal/professional’, ‘body/mind’. This tendency readily leads to the conviction that the personal-affective dimension is not important until it is transformed and conceptualized into the instrumental logical-technical dimension, instead of overcoming this dichotomous mode of framing the issue. This last step can be taken by using personal reflection.

An assumption of the advocates of EBM-enhanced determinative judgment through the use of scientific reflection is that those whose practice is based on this type of clinical expertise will provide superior patient care when compared with practitioners who rely on understanding basic mechanisms and their own clinical experience. Thus far, there is no convincing direct evidence proving this assumption correct (Haynes, 2002). However, the simple criticism that EBM is not enough in itself is not adequate, neither is the opinion that professional/personal experience is important. What is needed is a more precise insight into why the personal-affective dimension of professional conduct is important, how it works, and how it can be encouraged effectively. In this thesis we provide good reasons to explain why understanding and the use of one’s individual clinical experience must and can be improved by using the concepts of ‘sense making’ and ‘personal reflection on sense making’. We have given examples of the effectiveness of this personal and mindful use of reflection in health care. Further research is needed to examine the assumption that a combination of the purposeful use of ‘scientific reflection’ and ‘personal reflection’ will provide improved patient care,
professional/personal development and self-care and well-being of the health care professional.

**Personal reflection and scientific reflection are not compatible**

We have provided good reasons to demonstrate that personal reflection and scientific reflection form the key components of reflective equilibrium and reflective competence in medical practice and education. It is necessary to encourage both modes of reflection equally and it is possible to encourage personal reflection in an enhanced experiential learning programme.

One main objection is that the process of becoming a ‘good doctor’, as well as staying a ‘good doctor’, has two inherently conflicting aspects: the cognitive-logical and the intuitive-subjective (Grabov, 1997; Taylor, 2007). The methods and aims of scientific reflection and personal reflection are not compatible in education because this inbuilt tension between the two modes of reflection can easily become a source of constraint and disappointment (Gur-Ze’ev, Masschlein & Blake, 2001; Van Maanen, 1995). According to Van Maanen (1995) the aim of critical scientific reflection is to create doubt and engender a critique of ongoing actions, while at the same time students want to acquire practical skills and self-confidence. As such, critical reflection would disturb the functional-practice view that animates everything done by students.

Neglecting this tension would indeed be a genuine professional fault. Tension is inherent to reflective professional practice in obvious ways, that is, at each level – behavioural, clinical, scientific, personal – of our Float Model and also between the levels. The challenge is how to conceptualize and deal with this tension appropriately in theory, practice and education.

One of the most complete definitions of reflective and mindful practice comes from Epstein and Hundert (2000), with its encompassing intellectual, reflective, affective and behavioural competences immediately revealing this inbuilt tension. Our own definition of personal reflection also encapsulates several elements of uneasiness. For example, it combines non-judgmental exploration and the critical appraisal of experience, or the handling of different modes of certainty and uncertainty at the levels of clinical reasoning, scientific reflection and personal reflection. Translated into medicine, this clarifies one of the main paradoxes of balanced reflection and conduct in medicine and medical education: the contradiction in demands when...
working with both an empathetic patient-oriented attitude and using critical scientific appraisal.

It is precisely in taking this paradox as a challenge that the function of personal reflection may become clear, namely in (a) encouraging the identification and acceptance of this inherent tension of reflective professional competence in a mindful way instead of neglecting, and (b) analysing and understanding these characteristics properly with the help of the above-mentioned concepts of information processing and sense making, determinative and reflective judgments, and scientific and personal reflection.

In medical education, the fostering of a critical scientific attitude and competence is a dominant part of the curriculum culture and of the internal and external expectations of students and medical educators. The undergraduate programme of enhanced experiential learning, which was shown to be effective in one of our studies concerned with the encouragement of personal reflection, was part of a competence-based programme in which critical scientific reflection was also taught, at least at an undergraduate level. The challenge is to encourage and maintain this double reflective focus at the graduate level and in further specialist training.

In many ways, tension and uncertainty is inherent to a pluralistic view of reflective medical competence. A one-dimensional, technical, non-reflective view of medical expertise may suggest a tense-less competence, but this will easily create an illusion of certainty and a tension in practice by not meeting the expectations of patients and the self-care needs of professionals.

**Personal reflection cannot be taught / learned because it is a matter of personality (state-trait discussion)**

We have shown that it is possible for students to acquire the ability of personal reflection. Enhanced experiential learning seems to have an especially positive effect on the development of personal reflection in first-year undergraduate medical students. We have also shown that the encouragement of personal reflection is a delicate process that requires careful attention because it is connected with the growth of personal/professional identity.

A practical critique and warning is offered by Boud and Walker (1998), who mention several examples of poor educational methods and pitfalls when encouraging reflection. These include recipe following, reflection without learning,
the intellectualizing of reflection, uncritical acceptance of experience and the excessive use of teacher power. Procee (2006) concludes that what is missing in these examples and in most approaches to reflection in education, as well as in sceptical reactions, is an appropriate theory of reflection.

A more fundamental objection is that reflection cannot be taught or learned at all. One argument is that a lack of reflective judgment is a ‘stupidity’ for which there is no remedy. Procee (2006) illustrates that this is Kant’s standpoint. Although for Kant the main distinction was not between determinative and reflective judgment, but between judgment and understanding, he states that a lack of judgment is a ‘stupidity’ and not a ‘lack of understanding’. Because of the different character of judgment and reasoning, Kant suggests that examples instead of rules should be used to develop the power of judgment. Based on this vision, Procee comes to the conclusion that it is not possible to teach reflection, but only to practise it (Procee, 2006). Kabat-Zin (2005) has shown that reflective/mindful judgment can be undertaken in both formal and informal settings, but that it requires guided support and purposeful and continued practice if it is to become an effective habit.

In our opinion, due to its nature (oriented towards sense making, tacit knowledge and reflective judgments) personal reflection cannot be taught theoretically or instructed in the same manner as explicit/propositional knowledge, but it can be practised and improved through enhanced experiential learning and guided support. The principles of enhanced experiential learning, which we have shown to be effective for the encouragement of personal reflection, are: offering authentic experience, supported participation in relation to practice, a clear portfolio structure, a supportive mentor system and appropriate assessment. They may be effective because they take proper account of the individual nature of personal reflection in medical practice and in the student’s learning process. Further research is needed to test and examine more specific methods of guided support.

Trait or state?
A related issue involves the question: To which degree is personal reflection a stable fixed personality trait or a changeable state? The interrelationship between nature and nurture factors in medical education is part of a theoretical debate, of views on ‘good practice’ in medicine and of further research (Rees, 2005). The cognitive-logical dimension of reflection (scientific reflection) is habitually seen as a trainable state, standing at the centre of professional training and education. The personal-affective dimension of reflection (personal reflection) is more internally oriented and regarded as closely linked to the doctor’s personality. We have described how, for this reason, the personal-affective component, from a one-
dimensional technical-cognitive viewpoint, is mainly placed outside the domain of the medical profession and medical education, while an integrative and pluralistic viewpoint places it inside this domain.

We agree with the vision that professionalism is more a state than a trait, reached only after a prolonged period of learning, instruction and reflective experience. Experience only facilitates the development of expertise and professionalism when it is accompanied by reflection. Self-awareness and reflection on sense making is one of a doctor’s more personal attributes. Taking the personal reflection of health care professionals as a state means that it can be treated as a professional attitude and ability that can be acquired, maintained and enhanced to a great extent through practice and guided support. Having said this, we would like to add the following remarks.

Cognitive-logical intelligence is theoretically regarded as an aspect of personality, together with other dimensions of intelligence such as emotional intelligence and social intelligence (Salovey & Mayer, 1990; Goleman, 1995; Furnham & Heaven, 1999). Furthermore, the question of how stable personal traits actually are, along with the issue of whether ‘stability’ is an artefact of the chosen personality or practice model, both arise. Moreover, not only the traits and states of the individual doctor but also interaction with the environment – work and cultural conditions – play an influential role in shaping a doctor’s ability to reflect and his/her reflective conduct. Modern variants of the Five Factor personality theory, for example, take the interaction between person and environment into account more than previously, along with the way in which this interaction is shaped by the actor as a characteristic of their personality. This suggests that individual, social and cultural-psychological perspectives are more integrated (De Raad & Doddema-Winsemius, 1999).

Medical educators are confronted with a dilemma. Does education in personal reflection make sense for students without any talent for or attraction to reflection? Doctors will differ in their stable personal characteristics, some being naturally or culturally apt with respect to personal reflection and others not. Taking balanced professionalism as a norm, not every medical student can become a ‘good doctor’ because personal traits and/or cultural norms sets limits to their potential ability with respect to personal reflection. The same argument applies to the scientifically reflective doctor because personal traits set limits to analytical intelligence and an ability to reflect scientifically. However, a real difference in education is that
routines for the monitoring and assessment of trait restrictions concerning cognitive-analytical thinking and scientific reflection are inbuilt within the educational system to a greater degree than the personal trait restrictions concerning personal reflection.

A related dilemma involves the issue of whether expressing one’s personal reflection ability makes sense in the harsh practical reality of medical practice. Medical and educational practices will differ in their reflective culture, some being positive or negative, leading to attainment or attrition. Personality and identity cannot be isolated from the environment and culture. We have seen that one’s personal and professional identity and self-awareness are shaped and maintained in interaction with the environment, while the environment is shaped through the acts of the health care professional. This mutual interaction between individual and environment plays a constitutive role in the accomplishment or the erosion of one’s reflective equilibrium and balanced conduct. Therefore, raising awareness of this mutual interaction between individual and environment, and learning how to deal with it properly, must be an aspect of the encouragement of personal reflection and the empowerment of medical students.

**Perspectives**

Based on the conclusions and discussion we wish to formulate the following perspectives for research and development in medical education. This thesis indicates that the acquaintance and maintenance of personal reflection of medical students and doctors - as an important component of their reflection competence: the combination of scientific and personal reflection - is a matter of guided support and enduring practicing, rather than instructing and teaching. Personal reflection is mainly oriented on clarifying the process of ‘sense making’ using reflective judgments - while scientific reflection is mainly oriented on evidence testing ‘information processing’ using determinative judgments. Making sense out of one’s own or other’s experience or the environment is closely linked to one’s personality and identity formation and is culturally embedded. Consequently, the personal reflection attitude/ability (state) seems to be influenced both by the personality of the student/doctor (trait) and by context factors such as the education/work organisation and culture (environment). Another consequence is that personal reflection is a fragile process that is connected to a person’s frailty.

Not all medical students are predisposed to engage in personal reflection and reflective learning. However, not all educational situations are appropriate for
stimulating or using personal reflective either. It is, for example, rather unethical to ask students or doctors to reflect personally in an unsafe environment. However, the relationship between students/doctors and the situation or context is not one-sided but reciprocal. The situation/environment is a set of characteristics and positive or negative motivating context factors on the one hand. But on the other hand, their influence depends to a great deal on the personal reflective quality of the students/doctors which includes the awareness of their enactment of the situation/environment. Enactment is the selective attention, sense making and handling of diverse contextual factors. Therefore, an individually-oriented approach of students and doctors must inevitably be combined with a system-oriented approach. The latter means: (a) empowerment of individual students and doctors to become aware of and deal with the enacted situation/environment, (b) the monitoring, enhancement and maintenance of the quality of medical educators, and (c) their responsibility for a safe reflective culture in the learning and work settings.

Regarding the combination of scientific and personal reflection, it was clarified that these modes of reflection are complementary and that, albeit the tension between them due to their different nature and function, they are equally needed for balanced conduct. Balanced conduct is required for good patient care, improvement of professional expertise, and self-care and preservation of one’s own well-being.

Consequently, our hypothesis for further research is: the personal reflection attitude/ability (state), which can grow through guided support and enduring practicing, is a cognitive-emotional moderator variable between reflection as a personal trait and reflective conduct, with the environment (medical educators, organization, culture) as a set of possible moderator variables too. Reflective conduct is needed for a set of important outcomes (patient care, development, teamwork, self-care and well-being) (see Figure 1).

The value of scientific reflection is the augmentation of determinative judgments concerning ‘evidence’, while the value of personal reflection is the augmentation of reflective judgments concerning ‘meaning and relevance’. Even though both modes of reflection are complementary and equally needed, in our view, personal reflection is of a different order than scientific reflection. Theoretically, because in order to step beside and reflect (at a meta-level) on a system/routine of thoughts/feelings/habits, one needs less rules and a certain open-mindedness and flexibility. Personal reflection is not as much governed by logical/technical rules as scientific reflection. This characteristic offers the ‘requisite variety’ that is needed
to sense, select and handle the richness of the (patient) situation as well as the own professional/personal experience. Practically, personal reflection is of a different order because in clinical judgment and treatment concerning integral patient care ultimately ‘meaning and relevance’ is of a higher importance than ‘evidence’. This does not mean that clinical judgment and discussion are completely ‘free’ or ‘soft’, but that personal reflection is needed for balance in conduct, teamwork and discussion.

**Figure 1.** The interrelationships between: the reflection ability (state), reflection trait, the environment, reflective behaviour, and outcomes

<table>
<thead>
<tr>
<th>Personal reflective ability / state</th>
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<tbody>
<tr>
<td>Personal reflective trait</td>
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<tr>
<td>Perceived Environment</td>
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<td>(medical educators, culture, organisation)</td>
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In order to examine these substantiated expectations, we suggest the following issues for the Research & Development agenda:

1. A certain level of the personal reflective attitude/ability (state) is needed for adequate reflective conduct.
2. A certain level of the reflective/professional culture of the environment is needed for acquiring the personal reflection (ability) and exposing reflective conduct.
3. A certain level of the personal reflective attitude/ability (state) is needed to recognize and handle the process of the enacted (demanding) environment in healthcare practice.
4. The reflective/professional culture of the work environment determines (a) the dominant mode of scientific reflection or personal reflection, (b) the quality of each mode of reflection, and (c) the (opportunities for) integration.
5. Compared with the scientific reflection ability, the personal reflective ability has a relative greater positive effect on balanced conduct, and thus on the quality of patient care, professional/personal development, and self care and well-being.
Trait aspects of reflection can be measured with the Five Factor Personality Inventory (FFPI) (Hendriks, 1997). The reflection ability/state can be measured with the GRAS (Aukes et al., 2007), eventually in combination with other measures in order to capture the richness of reflection, such as the Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003). Reflective behaviour, at least the intention to act, can be measured with the vignette-method of Boenink (2005).

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