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# The basic framework of knowledge about practice in nursing research

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## Introduction

Clinical nursing research is designed to guide nursing practice and to improve the health and quality of life of nurses' clients (Polit and Beck, 2012, 3). To guide nursing practice, it's necessary to validate and refine existing knowledge and to generate new knowledge that directly and indirectly influences the delivery of evidence-based nursing (Grove et al., 2013, 2). This knowledge involves a problem domain about practice: what point of view is appropriate to inquire nursing practice.

The aim of this paper<sup>1</sup> is to examine basic approaches of knowledge about practice in nursing research. At the beginning, we outline a criterion of applied health research: generalization. That is why problems emerge with generalization or generalizability; typical issues arise when nursing research addresses practice in specific clinical situations due to the often fluid nature of the clinical encounter which defy standardized rules and procedures (Benner et al., 2010, 206). That is, only the general knowledge in science of nursing is not sufficient to guide nursing practice appropriately (Craig and Stevens, 2012, 11-13).

Next, we shall discuss Hans-Georg Gadamer's concept of practical knowledge. Gadamer investigated *phronesis* in the ethics of Aristotle and regarded it as "the only methodological model for self-understanding of human sciences" (Gadamer, 1996 [1963], 18 / 1987, 86).

Finally, we propose the basic framework about knowledge of practice in nursing research where two approaches of knowledge are distinguished in principle: the generalization-oriented one and the case-oriented one. These two approaches are complementary and contribute to science of nursing in their own manners.

## 1. The problem of generalization in qualitative nursing research

### 1.1 Generalization

Generalization is an act of reasoning from the observed to the unobserved, from a specific instance to all instances believed to be like the instance in question (Schwandt, 2007, 126). In nursing and other applied health research, generalizations are critical to the interest of applying the findings to people, situations, and times other than those in a study. Without generalization, there would be no evidence-based practice: research evidence can be used only if it has some relevance to settings and people outside of the contexts studied (Polit and Beck, 2010, 1451-1452).

Generalizability has its origin in quantitative research with its random statistical sampling procedures (Holloway and Wheeler, 2010, 300). Thus, generalizability is considered a major criterion for evaluating the quality of a study (Kerlinger and Lee, 2000, 474-475).

In qualitative studies, the issue of generalization is complicated, and controversial, because a goal of most qualitative studies is to provide a rich, contextualized understanding of human experience through the intensive study of particular cases (Polit and Beck, 2010, 1452). Qualitative researchers tend to emphasize the dynamic, holistic and individual aspects of human life, to attempt to capture those aspects in their entirety, within the context of those who are experiencing them (Polit and Beck, 2012, 14).

In summary, qualitative research is quintessentially about understanding an empirically real or constructed particular in the fullness of whatever contexts are relevant (Sandelowski, 1996, 526), therefore, that is a problem in qualitative research “to decontextualize data, removing them from the emotional and physical context within which they were originally constructed” (Paterson et al. 2001, 15).

### 1.2 Consideration about the issue of generalization in nursing research

Thus, the issue of generalization or generalizability has caused many discussions for decades. Some hold the view about the impossibility of any and all attempts to

generalize as they emphasize local narratives, local knowledge. The others maintain the desirability, possibility, and process of generalization within the broad field of qualitative inquiry (Kennedy, 1979; Lincoln and Guba, 1985; Stake, 1995).

Polit and Beck (2010), whose work is partly based on Firestone (1993), offered an instructive discussion of the issue of generalizability, making the point that there are three different models of generalization that involve their own “myth”.

The first model is *statistical generalization* that extrapolates from a sample to a population. It is the classical model underpinning most quantitative studies. Polit and Beck (2010) maintained that like most models, statistical generalizability is an ideal — a goal to be achieved, rather than an accurate depiction of what transpires in real-world research (p. 1452). This is a “myth” that perseveres in quantitative scientific inquiry in the human science. In principle, quantitative researchers begin by identifying the population to which they wish to generalize their results. Yet, they, indeed, start with only a vague notion of a target population. They are likely to have an explicit accessible population, that is, a group to which they have access and from which participants are sampled. Even accessible populations frequently are ill-defined in research reports. In many cases, the population may be identified based on sample characteristics, that is, the real starting point is often the sample, not the population.

The second model that is most often linked with qualitative studies is *analytic generalization*. According to the analytic generalization model, qualitative researchers develop conceptualizations of processes and human experiences through in-depth scrutiny and higher-order abstraction. As is true for statistical generalizability, the analytic generalization model is an ideal that is not always realized. Polit and Beck (2010, 1453) pointed out, based on Thorne and Darbyshire (2005), examples of the problematic patterns about analytic generalizability: premature closure, enthusiasm for artificial coherence and stopping when it is convenient rather than when saturation is attained. Thorne and Darbyshire (2005) specifically noted that problematic qualitative health reports present “overgeneralizations that spill out from the conclusions” (p. 1107).

The third model of generalization is *transferability* (Lincoln and Guba, 1985,

297-298). In transferability, the researcher's job is to provide detailed descriptions that allow readers to make inferences about extrapolating the findings to other settings. The main work of transferability, however, is done by readers and consumers of research. Readers can make good judgments about the study contexts and their own environments only if researchers provide high-quality descriptive information, that is, *thick description* (Geertz, 2000 [1973], 3-30). The transferability model like the previous two models of generalizability represents an idealized goal for researchers (Polit and Beck, 2010, 1454). In reality, the kind of description that supports transferability is often not as "thick" as readers need for making some informed judgments.

Polit and Beck (2010) concluded that the three models of generalization are ideals, not representations of reality, and that in the current environment in which evidence is held in high esteem, nurse researchers should strive to meet the generalization ideals embodied in the models, to compensate for lapses from it, and to identify those lapses so that the worth of study evidence can be more accurately assessed (p. 1457). They offered practical suggestions and strategies for developing evidence with higher validity and integrity (pp. 1454-1457). Rather than disdaining the possibility of generalizability or unfairly assailing the limitations of qualitative research to yield general truths, researchers with roots in all paradigms can take steps to enrich the readiness of their studies for reasonable extrapolation (p. 1458).

### 1.3 Reexamination of the issue of generalization or generalizability

The arguments of Polit and Beck (2010) are very persuasive: they stated, rather than a criterion of research, generalization is an ideal which is not always realized, therefore, they proposed some concrete strategies that permit to elaborate studies for striving to attain the goal of generalization.

Yet, there is room for arguments of the generalization or generalizability in qualitative nursing research. A problem of analytic generalization in qualitative study is to decontextualize (Benner, 1994, 104). In particular, for understanding the practice of nurses that is carried out in very complicated and contingent situations, it is necessary to describe its concrete context and background. Therefore Benner has often used

*narratives* of nurses. Sandelowski (1996) similarly pointed out the importance of the *case-oriented approach* in nursing research. According to her, regardless of the kind of analytic technique employed, qualitative analysts are obliged, first and foremost, to make sense of individual cases (p. 526).

To deal with this contestation about decontextualization in qualitative research, there is the third generalization: *transferability*. Transferability allows readers to understand the context of the study in detail so that they can transfer the findings of study to their own or other situations. But, we think, there are two problems concerning transferability.

The first problem is that transferability consists in reader generalizability (Misco, 2007, 4). In fact, the concerns of readers are very diverse. As Firestone (1993) noted, “one can’t know the situations in which readers are likely to consider applying study findings” (p. 18). If so, transferability may not adequately function as an ideal of research too, because the researcher is unable to describe all aspects, processes and possibilities of any particular given case.

Needless to say, we agree that “thick description” of the case often is very instructive for readers. This seems to mean that transferability is *some effects* of the findings of study. Apart from the transferability for readers, we think, each researcher must study or rather studies mostly from his or her own purpose and perspective for generating some new knowledge. In this view, transferability seems to be considered to be inappropriate as an ideal or goal of research.

The second is the fundamental attitude regarding generalization or generalizability of some kind as essential to qualitative research (Sandelowski, 1996; Polit and Beck, 2010). Sandelowski (1996) noted as follows; “Generalization is a word that has to be reclaimed for qualitative inquiry. Rather than abandoning it to quantitative inquiry, it must be retained for qualitative inquiry. By abandoning the word generalization, qualitative researchers contribute to the erasure of a kind of generalization (idiographic) more prevalent in human inquiry than the nomothetic generalization set as the standard in conventional scientific inquiry” (p. 528). Polit and Beck (2010) maintained that generalizability or applicability is an issue of great importance *in all forms of health and*

*social research* (p. 1457, emphasized by us). Yet, we think, these statements are open to discussion. According to Gadamer, the issue of generalization is contestable in the domain of practical knowledge.

## 2. Gadamer's notion of practical knowledge

### 2.1 Gadamer's criticism of modern science

The importance of generalizability *in all forms of health and social research* means that there are universal methods applicable in all regions of research. Gadamer (1983, 95-97) pointed out that modernity is defined by the emergence of such a new notion about science and method. In particular, Descartes grounded philosophically the scientific method that brings all things under control.

Method is a notion philosophy acquired in the ancient Greek, and the Greek notion of method referred to a way of conducting appropriate approach into phenomena. This notion of method had a criterion of 'appropriateness', respectively from the property of the studied region.

But Descartes developed the idea about the unity of method, that is, the way of universal assurance. In *Discourse of the method*, Descartes (1988[1637], 586-587 / 1931[1911], 92) proposed four rules as method: the first is to accept nothing as true which is not clearly recognized to be so and carefully to avoid precipitation and prejudice in judgments, the second is to divide up each of the difficulties, the third is to carry on the reflection in due order, the last is in all cases to make enumerations completely and review generally. Descartes' rules, — the criterion of truth (clearness and distinctness), the procedure of method (analysis and synthesis), the reconfirmation of validity — show basic characteristics of modern science.

As Descartes noticed fully, the outcomes of this science are not soon produced. Furthermore, as one researches, one finds the new and unknown things and areas of research; that is, science as research is empirical one that, never perfectly achieved, develops infinitely. This means that science as research is not suitable to be immediately ready for the settings of practice. Because this science can not show the ground

or reason for specific selections and decisions in practice each time they happen, Descartes proposed and followed himself *provisional moral maxims*<sup>2</sup> that, as for the daily life, are not based on the knowledge of scientific research.

That is to say, Descartes who established the methods of modern natural science, marked off a boundary between scientific knowledge and practical one. But, the boundary has been stepped across gradually<sup>3</sup>. In the nineteenth century, according to Gadamer (1996 [1963], 30-31 / 1987, 94-95), it is the same in the domain of moral and social phenomena, no less than in the natural sciences: in both cases the inductive method is independent of all metaphysical presupposition.. The natural-scientific ideal is adopted at the level of human and social phenomena. Undoubtedly, certain researchers conducted in this style, as for example in mass psychology, have been crowned with incontestable success.

In the twentieth century, Gadamer argued that the scientific-technical mastery of nature acquired proportions which qualitatively differentiated from earlier centuries. Scientists and philosophers began to treat human consciousness itself as an object of natural-scientific research, which was a problematic move. Science became a new kind of factor in human life, and this is its application to the life of society itself (Gadamer, 2010[1993], 17-21 / 1996, 6-9).

According to Gadamer, the consequence of this development of modern science is that science is invoked far beyond the limits of its real competence. "Now the experience which has been reworked by the sciences, has indeed the merit of being verifiable and acquirable by everyone. But then, in addition, it raises the claim that on the basis of its methodological procedure it is the only certain experience, hence the only mode of knowing in which each and every experience is rendered truly legitimate. What we know from practical experience and the 'extra scientific' domain must not only be subjected to scientific verification but also, should it hold its ground against this demand, belongs by the very fact to the domain of scientific research. There is in principle nothing which could not be subordinated in this manner to the competence of science" (Gadamer, 2010[1993], 12 / 1996, 2) .

The development of modern science has meant that science and technology have



gradually in a controlled manner become quite diverse in its aims and methods. In the nineteenth century (Gadamer, 1975, 312), practice has been understood as application of science to technical tasks, that is, practical reason was degraded to technical control<sup>4</sup>.

Here we find the demand of generalization or generalizability as to findings of human and social scientific research. Therefore, we think, Sandelowski (1996) as well as Polit and Beck (2010) maintained that transferability is included in a sort of generalization or generalizability.

Opposed to the trend of control over practice under scientific knowledge in general, Gadamer often proposed to go back and refer to the notion of *phronesis* in *Nicomachean Ethics* because there Aristotle in essence defined the knowledge of practice by comparison with other types of knowledge.

## 2.2 About *phronesis* (practical or ethical knowledge)

In the sixth book of *Nicomachean Ethics*, Aristotle distinguished two kinds of knowledge (1139a-1141a). One is concerned with what is necessary, that is, *episteme* (theoretical knowledge) whose model is mathematics. The other is concerned with what is not necessary, that is, *techne* (technical or craft knowledge) and *phronesis* (practical or ethical knowledge). An active being, said Gadamer, is concerned with what is not always the same but can also be different. In it one can discover the point at which one has to act. The purpose of one's knowledge is to govern one's *action* (Gadamer, 1990[1960], 319-320 / 1989, 314).

*Techne* and *Phronesis* share the commonality that one needs to be present in the particular situation to judge, and no general principle can be comprehensive enough to take account of the values of all the variables to be taken account of (Urmson, 1988, 36). Yet between them, there is a difference in nature. Warnke (1987, 92-93) illustrated in the following.

Filling teeth is an example of *techne*. One becomes a good dentist by filling teeth. By it, one gains a certain proficiency; one learns how to be faster and more efficient; one becomes less tentative and more secure in one's knowledge. Still, what one knows when one knows how to fill teeth does not fundamentally change. It always involves knowing

how to plug up a cavity with some kind of metal.

That is not the case of *phronesis*. For example, the elements involved in knowing how to act courageously may change radically. Courage may involve a willingness to die but also a refusal to die, standing up for one's rights as well as yielding to others. Thus, whereas the actions to be performed are always more or less dictated by the task set for technical knowledge (plugging up a cavity), the actions that the virtue of courage involves are not so given but rather depend to a far greater extent on individual circumstances as well as cultural values.

According to Aristotle (1180b), while *phronesis* like *techné* is intrinsically concerned with the situation where it is performed, it involves the general knowledge as well as the particular one about circumstances. If one would not have the general knowledge of fitting teeth or courage, one could not fit properly teeth or act courageously.

"All practical decisions of human beings depend indeed on their general knowledge. Yet a specific difficulty lies in applying this knowledge in the concrete case. It is the task of the power of judgment to recognize in a given situation the applicability of a general rule. This task exists wherever knowledge in general is to be applied; the problem is irreducible" (Gadamer, 2010[1993], 31 / 1996, 16).

In a similar fashion to Gadamer, Polit and Beck (2010) maintained, "clinicians will always need to be thoughtful about using 'generalizable' evidence, because generalizations are never universal" (p. 1458). Benner et al. (2011), too, said, "we support the advancement of evidence based practice, but recognize that the objective application of clinical trials and other research findings must be critically evaluated and selected for use in attuned and fitting ways for particular patients" (p. 13). Besides general knowledge, particular knowledge is indispensable to nursing practice.

In *Truth and Method*, Gadamer pointed out some features of *phronesis* in contrast with *techné*, whence we take up two contrasts relevant to nursing research.

The first contrast is the state of situation. As to *phronesis*, its situation is so diverse and changeable that practical knowledge (*phronesis*) has to respond to the demands of the situation of the moment, that is, it always requires this kind of self-deliberation. In contrast, technical knowledge, if it were available, would always make it unnecessary

to deliberate with oneself about the subject because one could find the right means. Concerning *phronesis*, Gadamer indicated, the consideration of the means is itself a moral consideration and it is this that concretizes the moral rightness of the end (Gadamer, 1990[1960], 326-327 / 1989, 321-322). In summary, *techne* is more predictable and controllable than *phronesis*, but this shows the inherent nature of *phronesis*, not its some deficiencies.

The second contrast regards the fact that *phronesis* is concerned with the other (s). Gadamer said as follows, “Beside *phronesis*, the virtue of thoughtful reflection stands ‘sympathetic understanding.’ ‘Being understanding’ is introduced as a modification of the virtue of moral knowledge since in this case it is not I who must act. Accordingly *synesis* (sympathetic understanding) means simply the capacity for moral judgment. Someone’s sympathetic understanding is praised, of course, when in order to judge he transposes himself fully into the concrete situation of the person who has to act. The question here, then, is not about knowledge in general but its concretion at a particular moment. This knowledge also is not in any sense technical knowledge or the application of such... The person who is understanding does not know and judge as one who stands apart and unaffected but rather he thinks along with the other from the perspective of specific bond of belonging, as if he too were affected (Gadamer, 1990[1960], 328 / 1989, 322-323). That is, in *phronesis*, one is concerned with the other (s) as partner (s) not as object (s), so that they are mutually affected.

These features of *phronesis* seem to be true of nursing practice; the situations of nursing are very changeable, and nurses usually have to do with diverse persons — patients, their families, doctors, colleagues, in some cases, novice nurses who need to be coached. Furthermore, nurses meet patients through so adequate and ethical relationships that they can provide appropriate caring, whereas in some cases, nurses too are given some comfort as they give that one to patients (Benner et al., 2011, 256).

If so, how does one acquire *phronesis*? Aristotle (1103b) stated that it is by following cases concerning practices of excellent persons. Here, Aristotle’s notion of practical and ethical knowledge is connected with Benner’s studies about excellence of nursing practice (Benner et al., 2010, 205-206; Benner et al., 2011, xvi).

### 3. The significance of the case-oriented approach in nursing research

#### 3.1 Excellent practical reasoning

Benner has researched critical care for a long time (Benner, 2001 [1984]; Benner et al., 2009; 2010; 2011). Benner et al. (2011) maintained that the aspects of clinical understanding and reasoning are not captured in static formal models that have been traditionally used to teach decision making because clinical situations are very ambiguous, unpredictable and varied. Therefore, expert nurses are engaged in clinical reasoning, that is, thinking-in-action and reasoning-in-transition in each particular situation.

Benner's studies adopted many narratives of nurses because the context about specific clinical situations in narratives is essential to understand their clinical reasoning. These narratives, particularly expert nurses' ones, are of assistance to understand and capture the clinical reasoning that enables the clinician to practice in particular situations appropriately. Certainly, they are very instructive for many nurses.

Therefore, we propose the basic framework about knowledge of practice in nursing research where two approaches of knowledge are distinguished in principle.

The first is, as we follow Sandelowski (1996), *the case-oriented approach* in nursing research that makes much account of each specific context of practice, including Benner's studies<sup>5</sup> because Benner et al. (2011) used not only narratives, but interviews and field notes of observation based on 'thick description'.

The second is *the generalization-oriented approach*<sup>6</sup> that intends to decontextualize findings of research and attain knowledge in general, including many quantitative researches as well as qualitative ones striving to make analytic generalization.

These two approaches are complementary, because the knowledge concerning particular contexts<sup>7</sup> is necessary to use appropriately general one, as mentioned previously.

Of course, as Benner et al. (2011) noted, narratives as well as cases can't take the place of what nurses should know in each situation with regards to their own nursing practice. Benner et al. (2011) stated, "Conjuring up the sense of risks and opportunities

in the narratives will allow the reader to rehearse their own agency or sense of risk and responsibility in the situation. Connecting the sense of risk, opportunity, and satisfaction creates a sentient compass to practice issues that will aid the reader in developing perceptual acuity and sensibilities. Narratives depict embodied quasi-emotional, fuzzy recognition of impending changes complete with felt uncertainties that are common in practice”(p. 23)<sup>8</sup>.

If so, one might have a question: narratives or cases in Benner's studies have their own significance in education rather than in study or research? According to Anthony and Jack (2009), case study on some occasions has been regarded as learning tools in nursing education (p. 1178).

We think, however, that Benner's works have significances and possibilities in science of nursing: Benner et al. (2011) stated, “We have used all levels of practice to articulate the everyday knowledge work of critical care nurses because sometimes the issues of expert practice show up in the ways a learner reaches for a higher level of practice... Expert practice is often made more visible in accounts of breakdown (situations that did not go well), because what is missing or the failed good practice becomes more evident. The intent, the failed notion of good, or the failed standard of excellence becomes visible by its absence. But we also draw on examples of successful, well-executed practice, situations that nurses identified as outstanding practice and where the evidence in the descriptive narrative supports their claim” (p. 3).

Benner intended to elucidate structures concerning excellence in nursing practice and ways to acquire such excellence, through many cases of successful or unsuccessful nursing practice. Here, we think, is the significance of Benner's works in the science of nursing (but to comprehend such structures appropriately, one needs to grasp the situations or contexts of cases or narratives from which structures are drawn).

### **3.2 Judgment and comportment *before practical reasoning***

We think that there is another theme of the case-oriented approach in nursing research, which is implied in Benner's works.

One of the main concerns of Benner et al. (2011) is “the skills of expert clinical

comportment, thinking and judgment” (p. 9), “engaged ethical and clinical reason” (p. 3), that is “practical reasoning” (p.10). Yet, as showed narratives of nurses (Benner et al., 2011), some ‘judgments and comportments’ *before practical reasoning* function at levels of perception and bodily comportment as below (p. 48).

**Nurse 1:** Because I do a lot of triaging patients. John Q Public arrives at my door saying, ‘I need to see a doctor.’ And it’s just amazing how it doesn’t even take me a quarter of a second now to know as soon as I see someone and they sit down, if they’re able to sit down, if I’m going to let them stay; or I’m going to send them to a clinic; or if I’m going to pick them up and put them on a gurney or something. It’s like this nurse radar that you get after about five years I think; it certainly wasn’t immediate. And it’s things that you don’t even really realize — that you can’t articulate anymore... you just look and you just know. It’s odd.

**Nurse 2:** My eyes are so much smarter than they used to be.

**Nurse 1:** Mine too.

**Nurse 2:** They take in a lot more, because it’s the fastest thing. Everything else is kind of slow. You’ve got to put a stethoscope on to listen for breath sounds and take your 15 seconds to get vital signs but your eyes can take in stuff really fast.

“You just look and you just know. It’s odd”, said Nurse 1. At a level of perception, some judgment has already been performed. It is similar at a level of bodily comportment.

“In familiar situations, expert nurses have already diagnosed and begin initiating treatment at the moment they recognize the clinical problem. For instance, in dysrhythmia monitoring and detection, at the moment an expert nurse sees a patient have a run of ventricular tachycardia or ventricular fibrillation, *without thinking, her or his body is already in motion to respond to the life-threatening event*” (Benner et al., 2011, 89, emphasized by us).

This demonstrates an important theme in nursing research, that is, the “skillful body”

(Benner et al., 2011, 89), because such a body functions as a foundation of “engaged ethical and clinical reason” in practice of expert nurses.

The “skillful body” is clearly not an object as well as a conscious subject. To elucidate the manner in which this body is concerned with particular patient(s) and situations, one should use not only narratives and interviews but perform participant observations because, as said Nurse 1 “It’s odd”, nurses can’t distinctively articulate judgments and comportments of their own “skillful body”. In addition, philosophical arguments about body or embodiment, for instance Merleau-Ponty (1945), perhaps contribute positively to when considering this issue.

## Conclusion

We have elucidated the basic framework about knowledge of practice in nursing research where two approaches of knowledge are distinguished in principle, that is, *the generalization-oriented approach* and *the case-oriented approach*. The former is traditionally admitted in science of nursing, for instance in quantitative research. The later has been a long time less recognized in nursing research. Yet, according to Gadamer, whose work was based on *phronesis* in the ethics of Aristotle, the case-oriented knowledge is essential to excellent nursing practice and has its own significance in domain of nursing research.

We think that the case-oriented approach is also concerned with studies about patients. Knowledge about particular experiences of patients which contain the feeling, thinking and handling of the illness or disorder in their own manner, is certainly very significant for nursing research (Benner and Wrubel, 1989).

Lastly, we point out, this paper does not deal with the art of case study, as we strive to elucidate the distinction of knowledge in principle and the significance of the case-oriented approach in nursing research. It remains for us to examine and illustrate the way to produce aptly a case research, making reference to Stake (1995), Yin (2009) and other literatures about case study.

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## Notes

- 1 Parts of this paper appeared in Ietaka (2013a; 2013b).
- 2 Descartes stated three maxims as below. "The first was to obey the laws and customs of my country, adhering constantly to the religion in which by God's grace I had been instructed since my childhood, and in all other things directing my conduct by opinions the most moderate in nature, and the farthest removed from excess in all those which are commonly received and acted on by the

most judicious of those with whom I might come in contact... My second maxim was that of being as firm and resolute in my actions as I could be, and not to follow less faithfully opinions the most dubious, when my mind was once made up regarding them, than if these had been beyond doubt... My third maxim was to try always to conquer myself rather than fortune, and to alter my desires rather than change the order of the world, and generally to accustom myself to believe that there is nothing entirely within our power but our own thoughts: so that after we have done our best in regard to the things that are without us, our ill-success cannot possibly be failure on our part" (Descartes, 1988[1637], 592-596 / 1931[1911], 95-97).

- 3 According to MacIntyre (1987), the ideal of mechanical explanation was transferred from physics to the understanding of human behavior by a number of English and French thinkers in the seventeenth and eighteenth centuries (p. 83). Gadamer found out in the introduction to Hume's *Treatise of Human Nature* the "most powerful formulation" of the inductive method at the base of all empirical sciences (Gadamer, 1996 [1963], 30 / 1987, 94).
- 4 As to the relation of technology and practical reason, Gadamer argued in the following manner. "The more rationally the organizational forms of life are shaped, the less is rational judgment exercised and trained among individuals. Modern traffic psychology, to illustrate this by an example, knows the dangers which lie in the automation of the regulation of traffic. Drivers find fewer and fewer opportunities for an autonomously free decision in their behavior and thus more and more unlearn how to make such decisions rationally" (Gadamer, 2010[1993], 32 / 1996, 17). This kind of tendency seems to be true of medical practice as well.
- 5 Benner et al. (2011) did not use 'case studies' because these 'case studies' mean 'formal case studies' which "usually take the position of an objective outside (disengaged) third person view" (p. 13), whereas 'case study or research' for us is "oriented towards analyzing concrete cases in their temporal and local particularity and starting from people's expressions and activities in their contexts" (Flick, 2009, 21). The case-oriented approach can also be called *the context-oriented approach*.
- 6 In contrast to the case-oriented approach, Sandelowski (1996) mentioned *the variable-oriented one* which aims for the isolation, combination and manipulation of variables, not *the generalization-oriented one* because she stated the significance of generalization in the character of transferability as described above. The generalization-oriented approach can also be called *the decontextualization-*

*oriented approach* in relation to the context-oriented one.

- 7 The word 'contexts' here has two meanings; the first is concerned with the situations of each specific practice, the second the cases of diverse nursing practice in its own context. The knowledge about these contexts allows clinicians to appropriately apply kinds of knowledge in general to their particular situations.
- 8 We think, this statement shows a kind of *transferability*, that is, reader generalization.