Reform by reflection: Schön's legacy to management practice in times of uncertainty

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Abstract

In this paper, we revisit Donald Schön's scholarly work on "handling uncertainty", suggesting that in order to cope reasonably well with uncertainty, practitioners should be encouraged to take a reflective existential stance, aimed to explore their own tacit personal style (i.e., theories-in-use). They should (i) recall and reflect on their theories-in-use to bear on the phenomenon, (ii) metaphorically explore and establish analogies, and (iii) seek to frame manageable problems while (iv) coping with the anxiety this creates. They should bear in mind that there cannot be an ideal outcome. Some practical implications are also discussed.

Keywords

Existentialism, Reflective practice, Technical rationality, Uncertainty.

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Introduction

The idea of reflective practice is in good currency (e.g., Raelin, 2011; Vince, 2012). In professions and academic disciplines as diverse as public policy, urban planning, health and medicine, teaching and education, psychotherapy, and management it has become common for individuals to ask such questions: how can we develop training programs, processes, and tools to facilitate and foster critical reflection and thinking among individuals (e.g., De DeaRoglio & Light, 2009)? How can we move from an individual level of reflection and intuition to a collective one (e.g., Mirvis, 2008; Sadler-Smith & Shefy, 2007)? How effective are our individual reflections or collective inquiries, and adequate to the challenges that confront us (Putnam, 2009)?

On the other hand, there has been the alarming experience of contemporary managers that the world they are creating and encountering is growing in discontinuity and surprises (Christensen, Anthony & Roth, 2014; Power, 2007). Uncertainty increasingly appears to be central to their activities (Latour, 2015). Problems are interlocked and do not follow pre-existent, clear-cut techniques and theories (Lester & Piore, 2014). Means and ends are acknowledged to be fuzzy (Grint, 2007). The nonlinear, puzzling realities of management practices appear to defy pre-defined tasks and tactics (Mintzberg, 2014) .

Arguably, management profession and programs such as MBA are suffering as the rate of uncertainty increases; unexpected shifts (e.g., change in oil price), manufactured risks (e.g., the credit crunch and toxic assets; Beck, 1992), and technological imbroglios (e.g., toxic toys) (Latour, 2015). In the case of credit crunch, for example, although no single group can be blamed for the economic meltdown, a number of high-profile MBAs have been implicated .

Too much is happening to the field of management, its standards, values and norms within the span of one executive's professional life to relax on established certainties or to be confident about their projection into the future. It appears, as if overnight, that the seemingly unthinkable becomes an idea in good currency for

executives and a generation of change is telescoped into a single year. Perhaps it is not an exaggeration to say that in recent times management professionals rapidly exercised their seemingly well-established certainties for a while only to realize that they are in fact ephemeral (Bauman, 2006).

In Drucker's (1992) terms, the field of management is now experiencing an 'age of discontinuity' in its established strategies, traditions, and norms; and history provides little previous similarity and experience. For any or all of these reasons, one can observe a "crisis of confidence" in management education and training programs such that concern with the direction, relevance, and effectiveness of many learning processes and policies has also been on the rise (Feldman, 2015; Kleinrichert, 2015; Mintzberg, 2014). In many areas, it seems that one cannot design programs or make predictions that will be valid for the next decade. There is less certainty about 'the line' of the future and, as options proliferate, they are faced with the dilemma of what social scientist Giddens (2009: 4) calls a "plurality of future scenarios ."

Donald Alan Schön (1930-1997), whose work best predicts and portrays such problematic situations, devoted his academic life to providing an actionable schema for tackling them, as well.

It is the argument of this paper that in order to cope reasonably well with uncertainty, management scholars and professionals as reflective practitioners require a new interpretation of Schön's work (what we call Schön's schema) as an intellectual map or cognitive schema, making sense of and improving their tacit personal style in a problematic situation. We seek to revisit Schön's inquiry about uncovering and enhancing this personal style useful under conditions of uncertainty and how it can further our understanding of management practice, education, and learning in times of uncertainty.

Why should we know about Schön's theory of handling uncertainty?

Schön's work on problem setting and solving, metaphor and metaphorical insight, framing, reflection, and the disruption of the

'stable state' in modern societies (Schön, 1971) provides a major and important linkage between such ideas and how management scholars and practitioners in late modernity do and should handle indeterminate, swampy zones of practice, i.e., uncertainty. However, Schön's remarkable erudition– his apparently limitless grasp of subjects as diverse as psychotherapy, music, planning and urban studies, social and organization theory, invention and technological innovation– very nearly masks the fact that his seemingly prescient work is very much about a few basic and heartfelt but decisive questions: What has happened to us? What do we have in store? What ought we to do?

The 'we' of his concern is Western Industrial Society; more narrowly, American society and institutions after World War II; and more narrowly still, professions, professional life, and the world of professional practice. Schön, as an exponent of existentialism (Stivers, & Schmidt, 2000), was intensely aware that thoughtful practice, grounded often in uncertainty and uncertainty's affective complement, anxiety, can become a generator of new knowledge whose validity and utility is, however, a function of practitioners' quality of reflection in and on their action (Schön, 1994). Consequently, Schön's schema was to reframe and reform the confusing and complex world of practice by the existential notion of self-reflection.

He explored in-depth professional practice as a kind of intuitive or existential artistry, as a non-rational engagement in making sense of problematic situations, selecting and naming 'things' of the phenomena, metaphorically exploring the new and unfamiliar in terms of its association with the old and familiar, framing the context, and setting new problems.

Conflicting views of professional knowledge

Schön is among the few who prominently address a central concern in the field of management – the one that essentially stems from the conflict and split between two approaches to professional knowledge and the epistemology of practice:

- Systematic and methodical application and adaptation of pre-existing means (preferably science-based) to well-defined ends under the realm of technical rationality.
- Artistic intuitive thinking and doing on one's feet through

(usually non-rational) reflective practice under the assumption that, in real-world situations of practice, means and ends are by and large fuzzy, and they evolve iteratively and determine one another over time according to one's reflective conversation with the situations.

Schön argues that a split of this kind which is barely tolerable in a professional school can create painful dilemmas for professions in organizational life, widening the rift between theory and practice, and above all resulting in serious consequences for society as a whole (Schön, 1983).

Technical rationality and the crisis of confidence

The context of these reflections was Schön's experience with the growing crisis of confidence in professional practice that was partly cause and partly effect of the American intellectual turmoil of the 1960s and '70s. Schön identified different and contradictory responses to that distressing time:

- debacle and demise (to reject and to revolt against failing systems in the form of reactionary radicalism),
- delusion (to return to the last stable state),
- defiance (to resist instability and change by dogmatism and defensiveness),
- despair and denial (to repress intolerable anxiety and uncertainty by selective inattention) (Schön, 1971).

Having refrained from espousing simple radical left or conservative right-wing solutions to this uncertainty, Schön joined a small group of intellectuals in the middle, acknowledging that the events of the 1960s and '70s have significantly undermined the ideological and epistemological foundations of traditional thinking and triggered a widespread confusion and crisis of confidence.

Schön argued that much of the confusion was due to an inadequate examination of the alternatives available in formulating and dealing with these upheavals and uncertainties, whether for individuals, for organizations, or for society as a whole. He indicated that the crisis of confidence and professionals' inability in effectively handling problematic situations arose in large part from 'technical rationality', the dominant model of professional knowledge and practice at the time. Technical rationality influenced the definition of knowledge and

practice of most practitioners and professional schools essentially aimed at applying reason (understood as science, scientific method, and technique) to resolve everyday problems of professional life and eventually the wellbeing of humankind (Schön, 1983). Yet, Schön observed, this firmly established epistemology of practice had failed. It had left professionals unable to set and solve many of the problems that they routinely addressed, i.e., those that defy ordered solutions and technocratic approaches based on technical expertise alone.

In its failure to address such issues, Schön argued, 'technical rationality' carried its own "epistemological nihilism" (Schön, 1971: 228). When its fundamental canons are questioned, it still tends to function as an overriding norm that permits little or no freedom to change (Schön, 1967, 1971).

Beyond the stable state

In 1970, he delivered the Reith Lectures for the British Broadcasting Corporation (published subsequently as *Beyond the Stable State,* 1971) asserting that the belief in humanity's ability to attain any deterministic, utopian form of stable state is illusory; that change is inevitable and any form of belief in reaching a calm, constant afterlife-within-life after a time of troubles is a myth. Schön believed that modern life and social systems are in permanent states of flux, but people are afraid of change and tacitly resist it while often appearing to themselves and others as not doing so (what he termed 'dynamic conservatism'). As a result, he argued, it is necessary to develop a new epistemology of practice for individuals, institutions, and social systems by which they become more open learning systems, capable of adapting and transforming while conducting a critical and self-reflective form of practice. This epistemology supports the development and use of heuristics that does not disregard the inherent uncertainty of experience, and demands a particular kind of ethic. This he called a Meta-ethic for 'change and dealing with situations of uncertainty', and for the rest of his life Schön pursued this line of inquiry in varied yet congruent forms and fashions.

Schön knew that the loss of the myth of the stable state is frightening; that people suddenly confront ambiguity and anxiety beyond tolerable bounds; that the established concepts of individual, profession, organization, and society decay or explode, and societies

are faced with more information than they can handle.

Reform by reflection

The shocks of the 1960s and '70s, had, Schön believed, unintentionally opened up the possibility of a new beginning – providing the momentum for reform and real change. His opinion was that the new beginning was not to be characterized by destructive formats of return, resistance, repression, or revolution. It could, and should, take the shape of 'reform by reflection'. Reform by reflection comes with learning about new ways of learning– ways that help individuals (including practitioners) overcome a technical rationality that systematically undervalues and ignores key characteristics of open and creative practice, i.e., reciprocal, playful reflections by which they learn to surface their tacit inner voice, reinvent the self and learn to recreate a better life, a life where they have an important and influential role in shaping a meaningful becoming (Schön, 1967, 1992, 1994).

However, Schön pointed out that the very tradition of technical rationality that created a world in which there was a central need for such critical reflections also makes it far from possible. For technical rationality, instability and uncertainty are, therefore, the sources of failure, a frightening 'Other' to be denied, repressed, or managed away.

Schön's existential orientation

Schön's stance is that many constants of our behavioral world are *artificial* (Simon, 1969) and *accidental* in the sense that they are created and intensified by human convention and continued by human choice – rather than inherent in the nature of the universe (Argyris and Schön, 1974: 17). We construct the reality of our behavioral worlds but we magically forget their origin, the laws and values, and mythical assumptions of stability and predictability that surround them (Schön, 1967: xiii). We tend to regard them as enduring and eternal. We easily forget that our artificial realities are always subject to revision, examination, doubt, or re-invention.

To avoid such illusions, Schön argues that practitioners must treat the binding constants of their behavioral world as both 'psychological certainty' and 'intellectual hypothesis' (Argyris & Schön, 1974)–

psychological certainty in the sense that such constants inevitably inform their assumptions and decisions during action yet must be regarded as intellectual hypotheses as these governing norms are subject to error, skepticism, and change. This apparent paradox is heightened in situations of uncertainty. The norms of behavior advocated by technical rationality may provide a basis for action in such situations but there is little ground for a more open, reflective, and existential approach to knowledge and theory building.

As a result, in such conditions, norms of technical rationality misread situations as practitioners fail to reflect or precisely notice what is happening because much of the dynamics inherent in the situation fall beyond the frames, measures, and logics of technical rationality. Put another way, technical rationality makes practitioners overlook the experimental dimension inherent in the reciprocal interaction between the behavioral world and their tacit knowing, theories, values, and assumptions, and the existential orientation that is required for on-the-spot reflection and experimentation, and learning from 'what is going on right here, right now'.

The failure to encourage a reflective existential stance usually results in reflex knee-jerk type responses to a lack of understanding and control in situations of instability, uncertainty, and chaos. It also means a failure to learn from exploring the way in which practitioners' theories, values, and assumptions have failed them.

The antidote is to treat our behavioral world as well as our governing theories, norms, values, and assumptions as intellectual hypotheses. Schön argues that this crucially involves, firstly, exploring and experimenting, and then enhancing our individual inner voice by reflecting on the personal as well as the interpersonal here-and-now (right here, right now). It involves an "existential use of the self" (Schön, 1991: 356) in making sense of what is happening between us, between you and me, between us and them, between me and the matter at hand.

Drawing on Polanyi (1966), Schön believes that we tacitly know more than we can say, and he considers the existential here-and-now as the test, the source, and the limit of our tacit theories, knowledge, assumptions, and values (Schön, 1971).

This existential use of the self begins with 'experience' and a crucial starting point– those theories drawn from the past cannot be assumed to be literally applicable to the here-and-now. Like

metaphors, they may suggest analogy, exemplar, family resemblance, projective models, or symbolic relations. Practitioners' theories may help them to develop the feel-for-something and make-sense-of situations and act in the here-and-now, but this is provisional, because such metaphorical explorations are inevitably subject to test, doubt, and error. This type of what Schön (1971: 231) calls "existential theory building" therefore grows out of existence – the present here-and-now – and involves re-examination against the next here-and-now, which may turn out to be different (Stivers, & Schmidt, 2000; Schön, 1971).

To further enhance personal competence in surfacing a precise inner voice as practitioners focus on the here-and-now, Schön explicitly took up the existential notion of 'existence precedes essence', extended it as a projective model, and argued that the experience (or phenomenon) precedes concepts about the experience (or phenomenon). In other words, Schön considers one's experience in the here-and-now to be both prior to and more fundamental than one's conceptualization or theory about situations prior to the fact (Hainer, 1968; Schön, 1974: 28). Put simply, practitioners shall get some experience before they conceptualize or theorize about the next piece of reality they encounter. Since practitioners know more than they can put into words, they must act in order to learn from their experience and from their tacit knowing in action.

In the face of complex and uncertain situations, Schön recommends that practitioners assume and build on this existential stance. This tenuous, provisional stance involves re-examining and reflecting on the personal as well as the interpersonal here-and-now, seeking and screening the hidden metaphors behind their ideas in good currency, renouncing authoritative unquestioned myths, and trusting themselves (their own inner voice) as they self-reflectively make sense of and experience what is happening in the 'ever-present present'.

'Theories-in-use' and 'Espoused Theories'

In *Theories in Practice* (Argyris & Schön, 1974), Schön, along with Argyris, formulated the concepts of 'theories-in-use' and 'espoused theory' to help translate this existential approach into *a basis for a meaningful personal style* useful for practitioners in testing and learning from their experience in the here-and-now. Schön

distinguished 'theories-in-use' (what they actually do in their actions or in their practice) from 'espoused theory' (what they say, conceptualize, and verbalize). He proposed that 'theories-in-use' are usually tacit, non-verbal, non-articulated worldviews, values, insights, strategies, and assumptions that shape intentional behavior and guide practitioners' action. Theories-in-use are the means for achieving what practitioners want or would like to achieve. 'Espoused theories' are explanations, justifications, and somewhat sanitized stories practitioners offer about their action and behavior. Espoused theories, therefore, are expressed images of the self in which practitioners believe or declare ideas and thoughts as if they are their true beliefs. The transition from the complex, comprehensive, and confusing 'theories-in-use' to simplified, selective, specific 'espoused theories' involves a very large reduction in content, wealth, and depth of experience. It involves the loss of much original differentiation or possibilities when practitioners use simplified symbols, codes, concepts, and patterns to stand for their complex theories-in-use (Argyris & Schön, 1974; Hainer, 1968).

Schön's schema is designed to support practitioners in transforming their hardly communicable experience into evolving concepts that would imbue their life with meaningful becoming through finding their inner voice and providing a valid basis for their tacit personal style and for educating others to do likewise.

The reflective practitioner

Within the information gap between theories-in-use and espoused theory, Schön identifies a critically important role for 'reflection-in-action' most clearly delineated in his seminal book *The Reflective Practitioner* (Schön, 1983). Reflection-in-action, says Schön, is the process of on-the-spot reflection and experimentation through which theories-in-use can be instantiated, developed, and on occasion modified and adequately verbalized (Schön, 1992).

The commitment to focus on events (here-and-now) in a reflective existential stance offers practitioners a great competency to encounter uncertainty. It lets them cope with the pieces of reality once practitioners encounter them, and then they modify and improve their theories-in-use as events require without being restricted by bias, stress, or defensiveness (Argyris & Schön, 1974: 28). The recognition

of instability, novelty, or unintended consequences, with their resulting ambiguity and anxiety, can become a source of reflection, experimentation, and appreciation, rather than despair, dogmatism, or denial.

The ability to take such a reflective existential stance and to be conscious of taking it is Schön's model of reflective behavior in threatening situations of uncertainty. Thus, any behavioral world, espoused theory, and theory-in-use could be regarded as conditional, tentative, subject to doubt and change, and likely to be refuted. Such a reflective stance reduces practitioners' need for stability or certainty, allowing them to be freer to test and improve their theories-in-use without intolerable disruption or being saddled with anxiety and ambiguity. The ability to take such a tentative yet creative stance implies that practitioners are able to envisage and crystallize, even to a small extent, behavioral worlds, theories-in-use, and espoused theories different from and more effectively than the ones they have created and jealously guarded.

Schön went beyond Dewey's pragmatist theories of learning suited to times of relative stability, arguing that the only way to learn and cope with the complex, rapidly changing world, is to take an existential stance in the form of reciprocal, reflective conversation with the situations (Richmond, 2008). The term conversation, in Schön's usage, is metaphorical and does not refer to a literal conversation about the situation but to a practitioner's conversation – like transaction with the matters and materials at hand. In transaction with the materials of a situation, a practitioner encounters surprises in the form of 'back-talk' that momentarily interrupts action, evoking uncertainty. Triggered by shock, surprise, or excitement, reflective practitioners *think on their feet* in the midst of action to frame and reframe the challenging situation. Reflective practitioners iteratively go on to transform such situations in a way that resolves uncertainty, at least for the moment.

The process of metaphor

What sparks off and stimulates reflection, the source of the 'surprises' that make this happen, for Schön has very much to do with the process of metaphor. Drawing on the German philosopher, Cassirer (2013) and his notion of 'radical metaphor', Schön (1963, 1979) argued that

metaphors, apart from being ornaments of language, are 'generative' in the sense that they intuitively come to mind and construe uncertain, unfamiliar situations in terms of our familiar and old images, theories, and concepts. Metaphors tacitly invade our feeling, thinking, and doing to formulate and frame our understandings and perceptions. Conceived in this way, 'generative metaphors' can nevertheless function as both stimulators and inhibitors for 'reflective practice'. Generative metaphors, however, create 'new ways of seeing', yet if treated as rigid will restrict critical reflection on 'ways of not-seeing'.

Treating 'generative metaphors' as hypothetical, flexible 'projective models' or as factual, solid, 'protective means' is the core dilemma rooted in language, says Schön. Practitioners may treat metaphors uncritically and unreflectively when they use them as somewhat rigid 'protective means' – when an old concept A comes to conservatively reduce and restrict their experience and conception of B without itself being questioned, reflected upon, or modified. This is the case when we use A to stimulate new ways of seeing B yet do not reflect on the ways of not-seeing which our rigid treatment of A has created. This conservative tendency may inhibit practitioners from effectively inquiring about the limits and strength of their metaphorical insight and inference. An example of such a metaphor is that of the 'balance scale', a central component of much of the language of decision making theories and logic. We 'weigh alternatives' in "binary oppositions" (mind/matter, subject/object, 'mechanistic vs. organic', 'to be or not to be', 'innovate or die', 'carrots or sticks', 'capitalism or communism', 'you are with me or against me', and recently 'publish or perish'), usually without examining the basis of the dualism. The balance scale metaphor is literally applied to frame and interpret situations in an unquestionable conservative manner – rather than reflectively deployed in a projective manner.

Metaphors can provide momentum for change, reform, reflection, creativity, and critical inquiry when practitioners use them as flexible 'projective models', when they make sense, interpret, and frame situations of uncertainty; casting and recasting them in new perspectives while inquiring about new possibilities. In more radical use of metaphors, practitioners treat B in the manner of A (or in terms of A), see B in A-like ways which might in turn enable us to question and see A in a way quite unknown before. This involves an ongoing

and reciprocal reflection to see and inquire about both A and B in fresh lights.

Discussion: Towards a practical implication for handling uncertainty in professional practice of management

In an uncertain situation (examples include: Europe immigration crisis, China's economic slowdown, managing Iran's post-sanction economy, sharp decline in oil price, etc.) as Schön argues, although action is required, the situation resists straightforward technical solutions (Schön, 1967). The phenomenon– as Dewey (1938) observes– is inherently problematic. It does not easily lend itself to precise definition and quantitative expression because possible outcomes or alternatives are unknown, vaguely defined, immeasurable, or only dimly apparent at the outset (Knight, 2006; Lester & Piore, 2014). Such situations can be both unique and pressing; at times, something needs to be done quickly without having a clear definition of the problems because there is too much competing information or too little to make an informed decision (Schön, 1967). In such situations, one must invent and reinvent received wisdom about what to do given that the problems faced are multifaceted, means and ends are fuzzy, alternatives are ill-defined, outcomes are indeterminate, and the smallest impulse may generate flaws or happy accidents which alter one's experience of the situation and ultimately the whole course of action (Dewey, 1930; Schön, 1983).

There are often mismatches between 'what one intends' (intention), 'what one can put into practice' (implementation) and 'what emerges and how one perceives' (realization) which block the flow of the kind of systematic and orderly activity and rational problem-solving recommended by technical rationality.

Here we hasten to add that in practice, uncertainty may be dealt with in different ways. According to the degree of fear and bewilderment, uncertainty may be screened through selective inattention; it may be repressed as undiscussable, as a taboo; it may be simplified through or by the making of myths (Malinowsky, 1954); or attempts may be made to convert it into an activity which can be carried out with minimal disrupting effects. From a psychological perspective, in all such cases, one usually seeks to avoid a greater

anxiety by selecting a lesser anxiety in concert with one's interests, tacit assumptions, value systems, and acceptable frames of discourse (Sullivan & Cohen, 1996).

Schön's argument is that under such conditions reflective practitioners strive to *convert* troublesome, ill-defined, and problematic situations into packages of manageable problems. But 'manageable problems' have to be created. They do not readily come in nice neat packages. Reflective practitioners actively convert uncertainty in vague and unfamiliar situations and frame and reframe the phenomena so as to formulate and design a set of problems, packages, programs, and policies on the assumption that the settlement of this set eventually leads to individual/organizational wellbeing. Schön believes that such activities are inevitable.

As Dewey (1938) argued, in the face of an unfamiliar and uncertain situation, the inquirer cannot stand outside the problematic situation like a spectator; the inquirer is in it and in a unique emotional involvement with it. So in contrast to technical rationality, a reflective practice of handling uncertainty usually begins with 'subjective experience' as central to its theory, hence one must get some experience before becoming able to generalize or theorize about the situation (Hainer, 1968; March, 1991; Schön, 1983). This practice usually involves making sense of an ill-defined, unique, or intractable situation that initially makes no sense. Handling such situations usually involves critical reflections, inquiry, on-the-spot experiments, toiling with irrelevancies, coping with anxiety, and framing or reframing the problematic situations and converting them into solvable problems. This demands reflection more on 'problem-setting' rather than 'problem-solving' – the process by which one defines the decision to be made, the ends to be achieved, the means which may be chosen.

Means and ends under such conditions are usually dim at the outset and arise out of a unique individual or social process of perception which is not explicitly conscious. Such perceptions cannot be precisely and comprehensively defined, only described. Descriptions are unconsciously simplified versions of experience (i.e., theories-in-use) and may not be understandable or communicable to others except when the symbols, concepts, and patterns others use (i.e., espoused theories) essentially resemble ours (Hainer, 1968). At times, one's practice of handling uncertainty can be reflected upon, decoded, and

put into coherent and communicable words (e.g., reflection-on-action). However, in the face of ambiguous situations, reflective practitioners know more than they can put into words. They reflect on their tacit theories-in-use and on the kind of improvisation learned in experience. Communication of experience in its complete context is not usually possible. But partial and fluid communication is possible if one generates a desire to find something of interest in the verbal or nonverbal message. If pattern forming, coding and decoding, interpretations, and symbolizing have been well done, and if the audience has had an approximately similar experience, then a sort of resonance will be established between an inquirer and the audience (Hainer, 1968). As a result, failure in communication is expected until there is shared experience.

There are two more important points to consider when engaging in a reflective practice in situations of uncertainty. First, it is important 'to sometimes treat memory as an enemy' and to consider that what is good at a particular historical moment is not always good at another time. Second, it is important to acknowledge that what is good for one part of an institution is not always good for another part or for the larger social system of which it is a part (March, 1991). The first point suggests that rules of the past, as well as propositions about the future, are not necessarily valid or meaningful. Only the 'here-and-now', 'right-here and right-now' or 'ever-present present' is valid and has meaning (Hainer, 1968). No pre-existing means and ends from the past may be taken as literally applicable to a here-and-now situation. Nor will experience of a situation prove literally applicable to the next here-and-now that will happen in the future. One's theories will need to be tested against the next here-and-now. So, in a reflective practice of handling uncertainty one cannot speak of probability or a literal application of theories to the next instance. In brief, this practice is broader than technical rationality.

Table 1. The summary has been discussed

Technical Rationality on Handling Uncertainty	Schön on Handling Uncertainty
Problem solving and dealing with well-defined situations	Problem setting and formulating problems in ill-defined situations
Reducing the situation into something familiar	Reframing and converting the situation into solvable problem
Language of calculation and definitions	Language of critical reflections and descriptions

Continue Table 1. The summary has been discussed

Technical Rationality on Handling Uncertainty	Schön on Handling Uncertainty
Using instruments and pre-existent means and ends	Undertaking inquiry in the here-an-now
Selecting lesser levels of anxiety	Coping with anxiety
Rational approach to making decision	Existential approach and on-the-spot experiments
Applying approved methods	Metaphorical exploration

Conclusions

This paper revisits the meanings of Schön's scholarly work on reflective practice which is particularly useful in situations of uncertainty. It synthesizes some of his contributions and suggests a framework for handling uncertainty. One key implication of Schön's schema is that professional practice under conditions of uncertainty often involves a primary yet overlooked process in which practitioners strive to *convert* problematic situations into packages of manageable problems. This process involves a number of generic activities such as (i) making sense of problematic situations, creatively recalling and reflecting on the ability of one's established theories to bear on the phenomena, (ii) metaphorically exploring the puzzling situation and establishing symbolic relations, and (iii) seeking to formulate and frame solvable problems while (iv) handling the anxiety this creates, with the result that there is no such thing as a final best formulation.

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