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Chapter 29
Donald Schön

Donald Alan Schön was a pre-eminent scholar of professional practice and learning. He is most celebrated for his work on the reflective practitioner and on organisational learning. He made significant contributions to the fields of education, management, urban planning, and design. His original intellectual home, however, was philosophy and throughout his career he regarded himself as a "displaced philosopher" (Waks 2001, p. 37). He wrote his Ph.D. thesis on the philosopher John Dewey's theory of inquiry, and as Sanyal (1998, p. 6) notes, "the Deweyian notion that all knowledge derives from practice remained at the heart of Don's formulation of the epistemological foundation of effective practice".

Schön was born in Boston in 1930 and lived in the city most of his life. Schön was educated in philosophy at Yale University (undergraduate) and Harvard University (Ph.D.), and in the clarinet at the Paris Conservatoire. After his Ph.D. and a short spell in the army, he worked for 15 years as a practitioner: in new product development at the consultancy Arthur D. Little, in government at National Bureau of Standards, and in a small enterprise as the co-founder and director of the Organization for Social & Technical Innovation (OSTI). In 1972, Schön became professor of Urban Studies and Education at the Massachusetts Institute of Technology (MIT), where he remained until his death in 1997.

Schön blended practice and theory throughout his life, as an academic, consultant and practitioner. While working as a practitioner, he made significant contributions to theory: three of his eight major books were written outside academia, and his invitation to give the BBC Reith Lectures in 1970 (the highly prestigious annual lecture series of ideas at the forefront of current thought) came when he was working at OSTI. When he became an academic, he remained involved as a consultant (as well as a researcher into professionals of many kinds).

Three facets of Schön's character stand out. First, he felt a close affinity with a giraffe: "long-necked, graceful, curious, aloof" (Warsh 1997, p. F1). Waks (2001, p. 37) describes the comparison as insightful, observing that "he also looked down upon the world of practice – learning its ways and assisting its denizens to make life a little better – from the inquisitive but distanced perspective of the philosopher". After his death his wife Nancy created a set of sculptures called "The Reflective Giraffe" in his honour (pictures of which can be seen on her website, N. Schön, n.d.).

Second, he was a highly accomplished musician. Trained in the clarinet, he played daily, both chamber music and jazz. Both these forms had a profound influence on his work. As Smith (2001) remarks, "this interest in improvisation and structure was mirrored in his academic writing, most notably in his exploration of professionals' ability to 'think on their feet'". Music was crucial throughout Schön's life, right up to the moment of his death. Sanyal (1998, p. 7), drawing on accounts by Don's son Andrew, writes that "it was a fitting farewell for his family to stand surrounding his bed holding hands and singing rounds of songs … as Don's eyes closed for the last time, the family members lowered their voices in sorrow only to be urged by Don who raised his right palm to request them to continue singing so he could listen to his favourite Brahms as he gently embraced death".

Third, he was devoted to his family. He was married to sculptor Nancy Schön, and they had four children and many grandchildren. At the time of his death, he was preparing one grandson for his barmitzvah (Schön was Jewish) and building a puppet theatre for his grandchildren, "who he taught the essence of reflection by having them critically conceive a theory of how a puppet theatre ought to work" (Richmond 1998, p. 3).

Schön's many contributions can be viewed in three, highly interconnected, major areas.

The first of these areas was his work on change. Schön's second book (1967) was subtitled *The New Heraclitus*. Schön had much in common with Heraclitus, the Greek philosopher of change from the sixth century BC, who discussed the constancy of change and argued that stability is a temporary phenomenon. The phrase "one can never step in the same river twice" is often attributed to Heraclitus (in fact it is a later paraphrase of his words) to indicate his view that stability in one area of the world – the river – is only achieved through rapid change in another area – the water that flows in it. In the same way, Schön argued from early in his work that change, partly delivered through technology and partly through society, is an ever-present feature in today's world.

Schön's clearest expression of his understanding of change came when he was invited to give the BBC Reith Lectures in 1970, at the time the youngest-ever person to have done so. The lectures were the basis of his classic and influential book *Beyond the stable state* (Schön 1971), which "sent unexpected tremors down the airwaves as he spoke about the loss of the stable state in society, and its implications for our major institutions" (Weil 1997). In this work, he argues that we have lost a situation where our society and its institutions can remain in their current form, and that they will need to keep continuously changing in the future. This requires us to understand and guide the transformations in our society and institutions, but also to transform them in a different way: "we must invent and develop institutions which are 'learning systems', that is to say systems capable of bringing about their own continuing transformation" (Schön 1971, p. 30).

In this work, he applied his concept of a learning system both to business organisations and to society and governments – the basis both for his later work on organisational learning but also for the concept of a 'learning society'. However, as he discussed, organisations have a significant tendency to fight to preserve

their structures and identity – that is, they exhibit 'dynamic conservatism', in Schön's term. As he observed, "social systems resist change with an energy roughly proportional to the radicalness of the change that is being threatened" (Schön 1971, p. 38). Dynamic conservatism is not entirely negative – it is the process "through which social systems keep from flying apart at the seams … our systems need to maintain their identity, and their ability to support the self-identity of those who belong to them, but they must at the same time be capable of transforming themselves" (Schön 1971, p. 60).

This work on change led to Schön's second major contribution, his work on learning. Much of this work was conducted with Chris Argyris, and is discussed in more detail in the chapter on Argyris. In their two major books, *Theory in Practice* (Argyris and Schön 1974) and *Organisational Learning* (Argyris and Schön 1978), they introduce a number of major concepts as well as that of organisational learning, notably the idea of a theory of action, the distinction between espoused theory and theory-in-use, and the concepts of single and double loop learning.

Much of the concept of organisational learning was present in Schön's work predating his collaboration with Argyris, although the idea in its mature form arose from the combinations of the ideas of both – Schön's philosophical and industrial experience, and Argyris' work in social psychology and group dynamics. As a former student of the two described his contributions to organisational learning, Schön's "big picture orientation … helped keep the fledgling field from becoming mired in micro-issues (analysis of linguistics and conversational patterns)" (Tomasko 1997). The same author comments on the differences in styles of interaction between Schön and Argyris, from a time when they were jointly teaching: "his warm and nurturing nature served as a great foil to Chris' sometime prickliness [although] … Chris could certainly be extremely warm and generous, and Don rigorous and judgmental when the situation called for it" (Tomasko 1997).

Schön's third major contribution was in the concept of reflective practice (and its parallel concept of the reflective practitioner). The starting point for this work was a study of professionals and their learning, and the observation of a "crisis of confidence in professional knowledge" (Schön 1984, p. 3). This crisis arises from a mismatch between the needs of professionals working in real situations, and the skills they learn through traditional education processes. In a vivid image (Schön 1984, p. 42), drawing on Russell Ackoff's use of the term 'mess', he wrote that:

> In the varied topography of professional practice, there is a high, hard ground where practitioners can make effective use of research-based theory and technique, and there is a swampy lowland where situations are confusing 'messes' incapable of technical solution. The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant to clients or to the larger society, while in the swamp are the problems of greatest human concern.

However, Schön argues, professional education is ill-suited for the problems of the 'swamp' – it is dominated by a model of "technical rationality", which stresses "instrumental problem solving made rigorous by the application of scientific theory and technique" (Schön 1984, p. 21). The importance of this approach to professional education arises from a lack of self-confidence in university departments educating pro-

fessionals – especially applied professions such as social work, education, architecture and town planning. Comparing themselves with the certainties and academic ground-edness of traditional university disciplines and long-established professional schools in medicine and law, these professions seemed at their founding less rigorous and well-founded. The Faustian bargain that resulted was that the education of these professionals would stress first the scientific foundations of the field, then a set of rigorous and instrumental techniques derived directly from those foundations, and only finally issues of the practice of these techniques and their relation to real-world situations. Thus in the process of trying to become more academically acceptable, these professional educators have removed themselves a long way from the things which will be valuable to professionals following their education.

The solution which Schön put forward followed on from his earlier work with Argyris on theories of action, as well as a number of other bodies of work, including his earlier interest in Dewey's understanding of knowledge, Vickers' appreciative systems (described in the chapter on that author), among others. He observed that much of what we know is only exhibited when it is enacted, which he referred to as knowing-in-action – a form of knowledge that is distinct from that which is learnt in the classroom and later applied. This knowledge leads to the process that Schön described as reflection-in-action: that when professionals act, and are faced with an unfamiliar situation, they improvise on the basis of past experience and their knowing-in-action. Someone who reflects-in-action "is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case" (Schön 1984, p. 68).

A reflective practitioner, therefore, is one who habitually reflects-in-action, and who cultivates their ability to do so. This latter process may well involve reflection-*on*-action, that is reflection on the action taken, after the event (post-hoc). However, these two processes are quite distinct. This is important to stress because it is post-hoc reflection which is the more familiar form – the quiet minutes at the end of the day, or the use of a journal. Some of those who have taken up Schön's call for reflective practice have stressed post-hoc reflection as the key activity for the reflective practitioner, and it clearly has a role, but it is not the heart of the concept as expressed by Schön, who stresses reflection in the midst of action. Schön frequently used jazz as an image of reflection-in-action: the process of improvisation in the moment based on a response to the situation (what other musicians are playing, the audience's response etc.), to the established rhythm and melody of the piece, and also on one's own abilities and enthusiasms.

The concept of the reflective practitioner can be seen as largely individual. Its focus is on how the individual practitioner learns and reflects, and it has been criti-cised by a number of authors for having a weak focus on power and politics. Verma (1998, p. 9) has defended this aspect of Schön's approach: "Don was deeply inter-ested in issues of power – not the power of holding a gun over someone, but a subtle form of intellectual power that grips us and forces us to act in particular ways … in its consequences it is as dangerous as more conventional forms of power. It can marginalise, dominate, and force particular outcomes."

Later in his life, Schön did apply concepts of reflection to questions of public policy – in one of his last major books he discussed the concept of frames ("underlying structures of belief, perception and appreciation" – Schön and Rein 1994, p. 23) created within an institutional context. They ask the question to what extent is it possible to change frames in a manner akin to reflection-in-action, observing that "policies are sometimes reframed in action, and their reframing sometimes results from the actors' reflection on frame conflicts that arise in the evolving, politically coloured process of policy design" (Schön and Rein 1994, p. viii).

Schön's major focus was on change in many forms and settings. As his colleague Jeanne Bamberger (2000, p. 10) summed up his concerns: "Don's persistent and abiding belief in the permanence of change, of evanescence, and transience was, I think, an underlying, moving force – it was the foundation upon which the multi-faceted puzzle of his several lives-in-one was built, and in its paradox, also knit together a life that worked as one vibrant whole."

Reading from Schön's work

When we have learned how to do something, we can execute smooth sequences of activity, recognition, decision, and adjustment without having, as we say, to 'think about it'. Our spontaneous knowing-in-action usually gets us through the day. On occasion, however, it doesn't. A familiar routine produces an unexpected result; an error stubbornly resists correction; or, although the usual actions produce the usual outcomes, we find something odd about them because, for some reason, we have begun to look at them in a new way. All such experiences, pleasant and unpleasant, contain an element of *surprise*. Something fails to meet our expectations. In an attempt to preserve the constancy of our usual patterns of knowing-in-action, we may respond to surprise by brushing it aside, selectively inattending to the signals that produce it. Or we may respond to it by reflection, and we may do so in one of two ways.

We may reflect *on* action, thinking back on what we have done in order to discover how our knowing-in-action may have contributed to an unexpected outcome. We may do so after the fact, in tranquility, or we may pause in the midst of action to make what Hannah Arendt (1978) calls a 'stop-and-think'. In either case, our reflection has no direct connection to present action. Alternatively, we may reflect in the midst of action without interrupting it. In an *action-present* – a period of time, variable with the context, during which we can still make a difference to the situation at hand – our thinking serves to reshape what we are doing while we are doing it. I shall say, in cases like this, that we reflect-*in*-action.

Recently, for example, I built a gate out of wooden pickets and strapping. I had made a drawing and figured out the dimensions I wanted, but I had not reckoned with the problem of keeping the structure square. As I began to nail the strapping to the pickets, I noticed a wobble. I knew the structure would become rigid when I nailed in a diagonal piece, but how could I be sure it would be square? There came to mind a vague memory about diagonals: in a rectangle diagonals are equal. I took a yardstick, intending to measure the diagonals, but I found I could not use it without disturbing the structure. It occurred to me to use a piece of string. Then it became apparent that, in order to measure the diagonals, I needed a precise location at each corner. After several trials, I found I could locate the centre point at each corner by constructing diagonals there […] I hammered in a nail at each of the four centre points and used the nails as anchors for the measurement string. It took several minutes to figure out how to adjust the structure so as to correct the errors I found by measuring. And then, when I had the diagonals equal, I nailed in a piece of strapping to freeze the structure.

Here, in an example that must have its analogues in the experiences of amateur carpenters the world over, my intuitive way of going about the task led me to a surprise (the discovery of the wobble), which I interpreted as a problem. In the midst of action, I invented procedures to solve the problem, discovered further unpleasant surprises, and made further corrective inventions, including the several minor ones necessary to carry out the idea of using string to measure the diagonals. We might call such a process 'trial and error'. But the trials are not randomly related to one another; reflection on each trial and its results sets the stage for the next trial. Such a pattern of inquiry is better described as a sequence of 'moments' in a process of reflection-in-action:

- There is, to begin with, a situation of action to which we bring spontaneous, routinized responses. These reveal knowing-in-action that may be described in terms of strategies, understandings of phenomena, and ways of framing a task or problem appropriate to the situation. The knowing-in-action is tacit, spontaneously delivered without conscious deliberation; and it works, yielding intended outcomes so long as the situation falls within the boundaries of what we have learned to treat as normal.
- Routine responses produce a surprise – an unexpected outcome, pleasant or unpleasant, that does not fit the categories of our knowing-in-action. Inherent in a surprise is the fact that it gets our attention. For example, I might not have been surprised by the wobble in my gate because I might not have attended to it; the structure might not have ended up square, and I might not have noticed.
- Surprise leads to reflection within an action-present. Reflection is at least in some measure conscious, although it need not occur in the medium of words. We consider both the unexpected event and the knowing-in-action that led up to it, asking ourselves, as it were, "What is this?" and, at the same time, "How have I been thinking about it?" Our thought turns back on the surprising phenomenon and, at the same time, back on itself.
- Reflection-in-action has a critical function, questioning the assumptional structure of knowing-in-action. We think critically about the thinking that got us into

this fix or this opportunity; and we may, in the process, restructure strategies of action, understandings of phenomena, or ways of framing problems. In my example, the surprise triggered by my observation of the wobble led me to frame a new problem: "How to keep the gate square?"

- Reflection gives rise to on-the-spot experiment. We think up and try out new actions intended to explore the newly observed phenomena, test our tentative understandings of them, or affirm the moves we have invented to change things for the better. With my measuring-string experiment, I tested both my understanding of squareness as equality of diagonals and the effectiveness of the procedures I had invented for determining when diagonals are equal. On-the-spot experiment may work, again in the sense of yielding intended results, or it may produce surprises that call for further reflection and experiment.

The description I have given is, of course, an idealized one. The moments of reflection-in-action are rarely as distinct from one another as I have made them out to be. The experience of surprise may present itself in such a way as to seem already interpreted. The criticism and restructuring of knowing-in-action may be compressed into a single process. But regardless of the distinctness of its moments or the constancy of their sequence, what distinguishes reflection-in-action from other kinds of reflection is its immediate significance for action. In reflection-in-action, the rethinking of some part of our knowing-in-action leads to on-the-spot experiment and further thinking that affects what we do – in the situation at hand and perhaps also in others we shall see as similar to it.

The distinction between reflection- and knowing-in-action may be subtle. A skilled performer adjusts his responses to variations in phenomena. In his moment-by-moment appreciations of a process, he deploys a wide-ranging repertoire of images of contexts and actions. So a baseball pitcher adapts his pitching style to the peculiarities of a particular batter or situation in a game. In order to counter an opponent's changing strategies, a tennis player executes split-second variations in play. We can say, in cases like these, that the performer responds to *variation* rather than *surprise* because the changes in context and response never cross the boundaries of the familiar.

However, in a kind of process that may look from the outside like the ones described above, a skilled performer can integrate reflection-in-action into the smooth performance of an ongoing task. I recently heard the story of a cellist who had been called to join in performing a new piece of chamber music. Because of illness, he missed the first few rehearsals and finally put in an appearance the day before the performance was to take place. He sat down with the other musicians and sight-read his way through the difficult part, playing it so well that the conductor had no need to reschedule the performance. As the cellist sight-read the score, he could not have known for certain where the piece was heading. Yet he must have sensed at each moment the direction of its development, picking up in his own performance the lines of development already laid down by others. He must have encountered surprises in response to which he formed, online, an interpretation guided by his emerging sense of the whole. And the execution of this feat left him

with a newly developed understanding of the piece and how to play it that he would reveal as knowing-in-action on the day of the performance.

When good jazz musicians improvise together, they similarly display reflection-in-action smoothly integrated into ongoing performance. Listening to one another, listening to themselves, they 'feel' where the music is going and adjust their playing accordingly. A figure announced by one performer will be taken up by another, elaborated, turned into a new melody. Each player makes on-line inventions and responds to surprises triggered by the inventions of the other players. But the collective process of musical invention is organized around an underlying structure. There is a common schema of meter, melody, and harmonic development that gives the piece a predictable order. In addition, each player has at the ready a repertoire of musical figures around which he can weave variations as the opportunity arises. Improvisation consists in varying, combining, and recombining a set of figures within a schema that gives coherence to the whole piece. As the musicians feel the directions in which the music is developing, they make new sense of it. They reflect-in-action on the music they are collectively making – though not, of course, in the medium of words.

Their process resembles the familiar patterns of everyday conversation. In a good conversation – in some respects predictable and in others not – participants pick up and develop themes of talk, each spinning out variations on her repertoire of things to say. Conversation is collective verbal improvisation. At times it falls into conventional routines – the anecdote with side comments and reactions, for example, or the debate – which develop according to a pace and rhythm of interaction that the participants seem, without conscious deliberation, to work out in common within the framework of an evolving division of labor. At other times, there may be surprises, unexpected turns of phrase or directions of development to which participants invent on-the-spot responses.

In such examples, the participants are *making* something. Out of musical materials or themes of talk, they make a piece of music or a conversation, an artifact with its own meaning and coherence. Their reflection-in-action is a reflective conversation with the materials of a situation.

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