

## FROM BUSINESS DRIVEN ACTION LEARNING TO ACTION SCIENCE - A REVIEW AND ASSESSMENT

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### Abstract

A selection of the cases included in Boshry (2000, 2002) are summarised and conclusions drawn regarding the nature of the processes employed. Revons's version of action learning is reviewed. The fundamental case for the importance of action learning and action research in business is reviewed, and action research and action science are defined and their relationships with action learning explored. Checkland's soft systems methodology is reviewed and its links to Argyris's action science made explicit. The contribution of C.S. Peirce to action research in management is explored. Conclusions are drawn concerning the relationship of action learning, action research and action science to the management process as it relates to open systems.

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# **FROM BUSINESS DRIVEN ACTION LEARNING TO ACTION SCIENCE - A REVIEW AND ASSESSMENT**

## **INTRODUCTION**

The term “Business Driven Action Learning” (BDAL) is used by Boshry (2000, 2002) to describe the application of action learning in business. He describes BDAL as “a process and philosophy that can help change people change a company’s strategy, and the behaviour of its people. In its most accomplished form it can provide breakthrough business results as well as highly rewarding personal and organisational learning and development...As a philosophy, business driven action learning is based on the belief and practice that learning should be tied to business realities, and that some of the best business solutions can come from fellow executives and employees” (Boshry, 2000, p xi).

In the second volume, Boshry sharpens this definition to emphasise leadership and results- “BDAL is a term used to describe a results-focused orientation to individual leadership development and organizational learning and change. It can be summarized as integrating individual development and organizational strategy with business results” (Boshry, 2002, p 30).

As way of an example, Boshry cites the case of Asea Brown Boveri (ABB), who believe that its managers “learn and develop 70% on the job, 20% through the influence of others, including their bosses, colleagues, and subordinates, and 10% through external courses and seminars”.

Boshry’s work is of particular interest since the two volumes he has edited provide one of the most comprehensive accounts of action learning in recent business history. In this sense it contrasts with the more general treatments of action research such as that provided by Reason and Bradbury (2001) and the more theoretical coverage of organizational learning such as Dierkes, Antol, Child, and Nonaka (2003).

Boshry’s volumes are also distinguished by the extent to which the accounts of action learning are based on methodologies broadly attributable to the work of Revons (1971, 1979, 1982, 1998).

In this paper, the following approach is used to review and assess BDAL:

- A selection of the cases included in Boshry (2000, 2002) are summarised and conclusions drawn regarding the nature of the processes employed.
- Revons’s version of action learning is reviewed.
- The fundamental case for the importance of action learning and action research in business is reviewed,
- Action research and action science are defined and their relationships with action learning explored.
- Checkland’s soft systems methodology is reviewed and its links to Argyris action science made explicit
- The contribution of C.S. Peirce to action research in management is explored.
- Conclusions are drawn concerning the relationship of action learning, action research and action science to the management process as it relates to open systems.

## **BUSINESS DRIVEN ACTION LEARNING**

Boshry (2000) is based on papers delivered at the first “Global Forum on Executive Development and Business Driven Action Learning” held in June, 1996. The following multinational companies are represented:

- DaimlerChrysler
- Dow
- DuPont
- General Electric

- Heinekin, Shell etc, as part of a Dutch consortium
- Hoffman La Roche and Boehringer Mannheim
- IBM
- Johnson & Johnson
- Motorola
- Philips
- Scancem
- Siemens
- Volkswagen

Boshry (2002), which is based on subsequent global forums (dates not given), broadens the coverage by looking at some “new economy” companies and some not-for-profit organisations. Some attempt is also made to provide a more worldwide perspective by looking at the action learning as practised in three areas of North and South America; Europe; Middle East and Africa; and the Asia-Pacific. This includes some of the emerging markets in Europe<sup>1</sup>.

An important caveat on considering this material is that consultants and in-house managers provide most of the accounts. Consequently, objectivity of any assessments regarding the performance of BDAL could be questioned. However, the accounts of the processes followed should be credible in the sense of providing case studies. This will be enough to serve our purpose, which is focussed on methodologies and the extent to which they have been applied.

On the basis of the cases, Boshrey concludes that BDAL “as practised in some of the best companies involves five key elements:

- The active involvement and support of senior executives;
- Work on real business issues and the exploration of new strategic business opportunities;
- Action research and learning focussed on internal and external company experiences and thinking that can help resolve business issues;
- Leadership development through teamwork and coaching;
- And the implementation of recommendations and follow-up on business issues examined, and the organizational and individual learning that took place, thus enhancing positive business results and ensuring that learning is greater than the rate of change (L>C)” (Boshrey, 2000. p xiv).

Boshry goes on to emphasise that BDAL differs from other forms of action learning because it not only addresses the importance of individual and group learning, but “integrates company-wide learning with individual executive development and teamwork”. Furthermore, BDAL embraces a full range of learning methods including:

- Traditional methods (lectures and cases);
- Individual learning (learning journals, self evaluation, coaching etc);
- Consulting methods (researching, analysing, interviewing, presenting; communicating, implementing);
- Benchmarking and best practices (experiential learning, best practice visits, competency analysis and gap analysis);
- Team-based learning (facilitation, coaching);
- Information technology (knowledge management, groupware, distributed learning, simulation, videoconferencing).

The summaries of a selection of the cases (see Appendix 1) support Boshry’s observations, particularly those relating to the variety of approaches used, but within a common set of principles.

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<sup>1</sup> This is an ambitious volume with discussion ranging from more on GE to Tibetan Buddhism and the Action Reflection Learning Philosophy.

While the cases described emphasise company practice, few of the cases expose any strong theoretical basis to the design of their approach. Essentially this is left to a chapter by Weinstein (Boshry, 2002, Ch 1) in which the contributions of Revons are emphasised.

## THE REVONS ACTION LEARNING MODEL

Revons summarised his approach using the “learning equation”:

$$L = P + Q$$

where :

L = learning

P = traditional instruction or programmed knowledge; and

Q = “the ability to ask insightful questions when there can be no certainty as to what next might happen”.

The significant thing is that while P may be necessary, it is not sufficient for learning to take place.<sup>2</sup>

Lessem (1993) provides a significant insight into the basis of Revons’s approach. Lessem argues that Revons was strongly influenced by English empiricism and ‘pragmatic traditions’<sup>3</sup>, specifically, Francis Bacon (17<sup>th</sup> Century), Adam Smith (18<sup>th</sup> Century), and Samuel Smiles (19<sup>th</sup> Century). Revons’s evidences this by the manner in which his learning equation draws distinction between his P and Q terms. While Revons is critical of the extent to which these two factors have been separated in management science, one wonders whether Revons is making this distinction largely to emphasise that his approach has a bias towards Q. Lessem observes that Revons “reveals an almost religious devotion to grounded learning, and to the ‘spiritual barter’ that fellow learners undergo in the process..... a process whereby our latent capacity for warm and genuine exchanges manifests itself... Revons’s mission may well be reflected in the quote from Toynbee’s A Study of History:

*“Real progress is found to consist in a process defined as ‘etherealisation’, an overcoming of material obstacles which releases the energies of society to make responses to challenges which henceforth are internal rather than external, spiritual rather than material.”* (Lessem, 1993, 63, 79)

This vision of Revons has evolved through a lifetime of action learning, undoubtedly shaped by his experience as athlete, scientist, manager and coalface worker. He has devoted some fifty years to developing his ideas and testing them in companies, the hospital service, in government and education. Perhaps more than anything, he has fought to close the gap, particularly in Britain, between the ‘artisan’ and the ‘scribe’ (Lessem, 1993, 63).

Lessem concludes that Revons’s version of action learning is “caught between three stools. On the one stool sits Mr Commonsense. He says he does it anyway, so what’s the all the fuss about? On the second stool sits Mr Conservative. He says that it all sounds like good stuff, but why should he rock the steady boat? On the third boat sits Mr Social skills. He says that action learning is just one kind of interpersonal process. It has its merits, but so do a whole lot of other approaches”. (Lessem, 1993, 78-79).

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<sup>2</sup> Obviously this “equation” is purely symbolic: if “+” is being used as a logical operator, then its additive nature precludes any interaction between P and Q. A multiplicative logical operator would be more appropriate.

<sup>3</sup> This reference to “pragmatic traditions” should not be confused with the later reference to American Pragmatist philosophy (see later).

Lessem describes Revons's learning process model as a triangulation between understanding, action, and reflection and draws parallels with Kolb's Learning Cycle which he claims is "an adaptation, consciously or otherwise of that of Revons". (Lessem op cit, 70).<sup>4</sup>

If Boshry's surveys are a guide, Revons's work has obviously generated a great depth of practice. Indeed quite a remarkable set of "marketing channels" have been developed to deliver the Revons framework and philosophy. These "channels" include:

- The Revons Action Learning & Research Institute established in 1995 at Salford University, UK. This institute cites some 210 research practitioners (as of March, 2003). (See [www.revansinstitute.co.uk](http://www.revansinstitute.co.uk)).
- The MiL Institute founded as a non-profit organisation in 1976-77 at Lund University, Germany. This Institute has some 150 companies and 100 professionals in its network and conducts international executive programs in the UK & Europe, US, and Asia. It co-founded the Scandinavian Action Learning Society. (see [www.mil institute.se/cgi-bin/uncgi](http://www.mil institute.se/cgi-bin/uncgi)).
- The University of Action Learning at Boulder, Colorado, USA, which conducts accredited Bachelor's degrees, Graduate certificates and diplomas, and Master's degrees. It was established within the global framework of the International Management Centres Association (IMCA). (See [www.u-a-l.org](http://www.u-a-l.org)).
- IMCA - described as "the world's leading Action Learning association". It has a branch based in Brisbane with further links to websites such as Metafuture.org.

Revons's model has been developed by others to include further processes. Burke (2001) summarises these developments as follows:

- L=P+Q+I .....Marquardt (adds Implementation)
- L=P+Q+C+I .....Davies (adds Culture)
- L=P+Q+WoK+C+I ..... Inayatullah (adds Ways of Knowing).

## FROM ACTION LEARNING TO ACTION RESEARCH AND ACTION SCIENCE

The previous section suggests that the current use of the term "action learning" is closely associated with Revons. This is distinct from the literature of organisational learning, which is now quite extensive (for example, see Dierkes et al, 2003).

The key feature of the Revons's approach is its emphasis on "action" with aspects of "research" and "science" left at a somewhat superficial level.

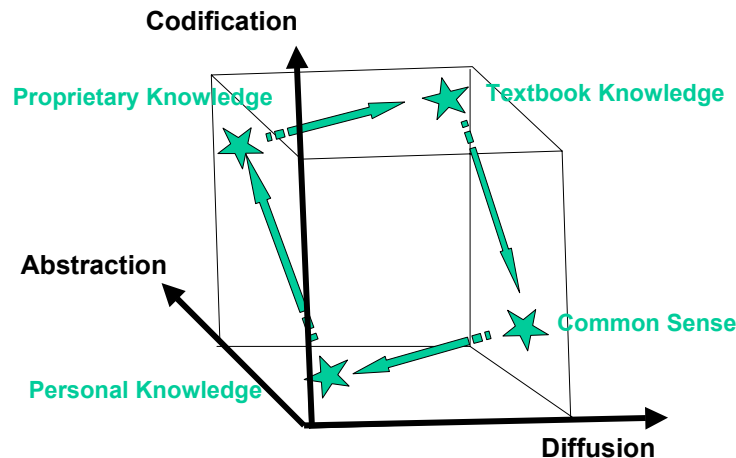
Boisot's model of information space can help us better understand the position of Revons's action learning. Boisot (1998) proposed that learning occurs in an information space defined by three three dimensions:

- Diffusion;
- Codification; and
- Abstraction.

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<sup>4</sup> This is something of an audacious claim- Kolb's learning cycle, along with its first cousin- Deming's PDCA cycle, has distinct and identifiable links back to Dewey's experimentalism and hence to Singer and Peirce. It is more likely that it is Revons who (re)discovered a form of this earlier form of learning and scientific method.

**Figure 1: Boisot's Information Space**



This framework allows Boisot to articulate a “social learning cycle” that includes:

- Scanning;
- Problem solving
- Abstraction
- Diffusion;
- Absorption; and
- Impacting

It is suggested that Revons's framework primarily exists in the Codification-Diffusion plane. In this sense, the learning equations represent a codification of experience gained from applications in industry such as those described by Boshry (diffusion). While components of Revons's action learning clearly align with aspects of Boisot's social learning cycle, the absence of a clear process of abstraction provides the key distinction between Jevons's action “learning” and action “research/science”.

### **ACTION RESEARCH (AR)**

Reason and Bradbury (2001a) provide a useful contemporary account of “Action Research”. However, not all of this is directly related to management; the term AR is now so widely used to cause some concern when it is used within any particular context, particularly in management.

Reason and Bradbury comment - “(F)or the term ‘action research’ has been used in so many different ways that the term has lost some of its original weight. Sometime it is used to describe positivist research in a ‘field’ context, or where there is a trade-off between the theoretical interests of the researchers and the practical interests of organization members; sometimes it is used to describe relatively uncritical organizational consulting based on information gathering and feedback.....The action research family includes a whole range of approaches and practices, each grounded in different traditions, in different philosophical and psychological assumptions, pursuing different political commitments.” (P xxiv).

Reason and Bradbury identify diverse origins to the various connotations to action research including:

- Lewin's exploration of group processes and social inquiry
- Tavistock Institute's experiments with socio-technical systems and social democracy
- Critiques of positivist science and scientism
- Indigenous traditions
- Marxism

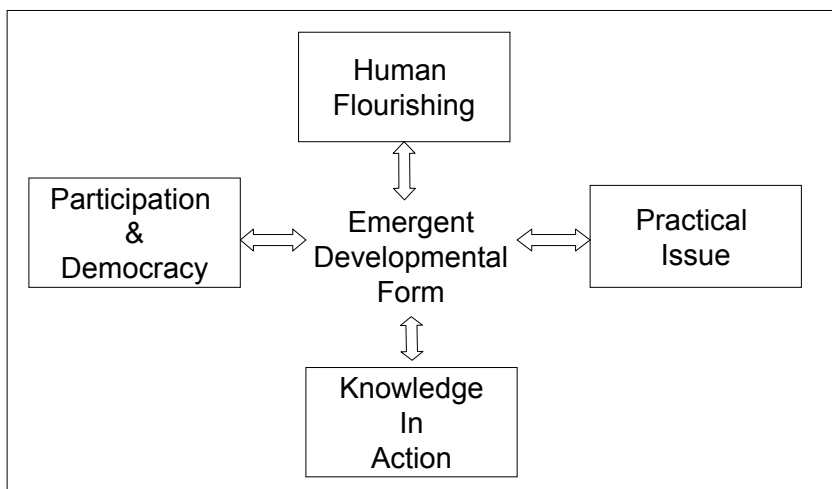
- Liberation movements
- Spiritual approaches to inquiry
- Pragmatist philosophy

Reason and Bradbury (2001 b) finally characterise AR in terms of the five “broadly shared features”:

- An ultimate goal to improve the human condition
- An agreement to work towards practical outcomes
- The creation of new forms of understanding through experience and reflection
- The application of participative processes
- A reliance on emergent phenomena as “individuals develop skills of inquiry and as communities of inquiry develop within communities of practice” (p 2).

Reason and Bradbury summarise these characteristics in Figure 1.

**Figure 2: Characteristics of Action Research. Reason & Bradbury (2001b, 2)**



Like Revons, Reason and Bradbury’s failure to clearly define how the processes described really add to knowledge in explicit terms, makes their use of the word “research” difficult to accept. It is for this reason Argyris and others introduced the term Action Science - see below.

We are now in a position to further restrict our discussion and choose only those versions of Action Research that are applied in management. This compares to, for example, AR in social policy and “community AR”. Consequently, we will not consider it a priority to study aspects such as the indigenous origins of AR, even though such a study may provide useful anthropological insights into issues such as environmental management and knowledge management.

## **ACTION RESEARCH IN MANAGEMENT**

When AR is explicitly linked to management, we in fact bring together three terms that individually mean many different things to different people- indeed we are attempting to synthesise three key theories:

- Theories of Action
- Research theory
- Management theory

Each has a somewhat contentious history with paths that cross from time to time. Action theories are of fundamental concern to sociologists, research is often claimed as the province of the physical scientists,

with the work of social scientists being considered dubious, and, of course, the very idea that you can have a useful “theory” of management is much disparaged by practicing managers.

Nevertheless, the case for using AR in management is strong. This case was presented in the most authoritative terms in an exchange between Van de Ven, Argyris, and Beer at a research conference at the Harvard Business School. The conference was designed to address the paradox of change management and was aptly titled “Breaking the Code of Change”, which became the title of the book published on the basis of the conference proceedings, and an article in the Harvard Business Review. (Beer and Nohria, 2000 a, b).

The exchange arose out of a reference made by Van de Ven to a case study of business school management by Nobel Prize winner Herbert Simon in the third edition of his seminal book on Administrative Theory (Simon 1964/1976).

Simon writes:

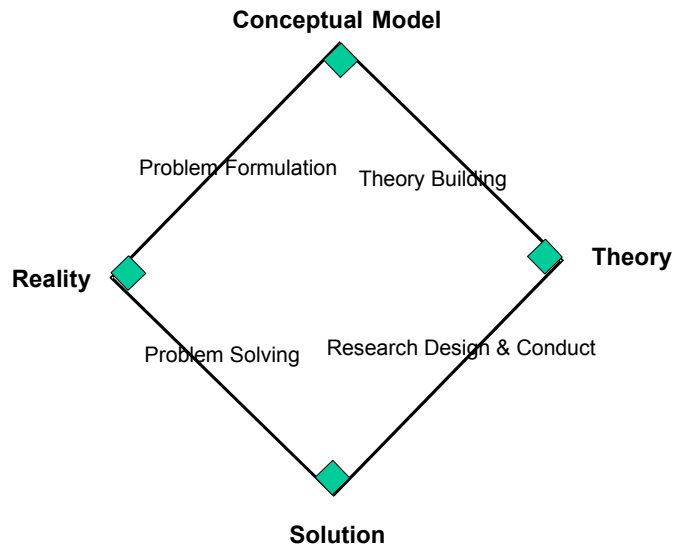
*The tasks of the business school are to train men for the practice of management as a profession and to develop new knowledge that may be relevant to improving the operation of business...Business schools are a particular species in the genus known as professional schools....Information and skills relevant to the accomplishment of a professional school's teaching and research goals come from two main sources. First, they come from the world of practice: information about the institutional environment in which the profession is practiced, about the [problems of the practitioner....Secondly, effective access to information and skills within the several sciences that are relevant to and contributing to and contributing to the improvement of professional practice...A professional school administration..have an unceasing task of fighting the natural increase of entropy, of preventing the system from moving toward the equilibrium it would otherwise seek....All efforts to prevent this equilibrium state of death must be aimed at lowering the barriers that impede communication between the discipline oriented and profession-oriented wings of the faculty...One of the deep sources of communication difficulty between the discipline-oriented and the practice-oriented members.. stems from the difference between science and art, between analysis and synthesis, between explanation and design...The techniques the scientist uses toward his goals are usually called “analytic”. .The techniques of the practitioner are usually called “synthetic”....*

*Analysis leading to explanation is generally thought to be itself susceptible of analysis and systemization. It is thought to be teachable because explicitly stateable. Explicitness and lawfulness are characteristics attributed to science. Synthesis aimed at design is generally thought to be intuitive, judgmental, not fully explicit. Design cannot be fully systemized, hence is an art, so it is said....A full solution, therefore, of the organizational problem of professional schools hinges on the prospect of developing an explicit, abstract, intellectual theory of the processes of synthesis and design, a theory that can be analyzed and taught in the same way as the was of chemistry, physiology, and economics can be analyzed and taught... ”*

While this statement establishes the core of the discussion between Van de Ven, Argyris, and Beer, it also provides insight into the importance of systemic thinking in management.

In his paper, Van de Ven notes the critical influence Simon’s observations had on his research approach which he encapsulated as a “baseball diamond” linking reality, conceptual model, theory, and solution as shown in Figure 2 below.

**Figure 3: Van de Ven's Professional Research Diamond Model**



Argyris's paper illustrates a number of examples that "exemplify the gaps and inconsistencies in the experts' wisdom" concerning change management and proceeds to propose a "theory of effective action". He lists the basic premises of this perspective as:

- At the core of human and organizational life is effective action.
- Actions are produced by individuals using their mind/brain
- The way the mind/brain produces actions is to use the designs that are stored in and retrievable from the human mind/brain
- The designs are causal. They specify intentions to be achieved, the actual behaviour required to achieve them, and the values that govern actions
- The designs that are actionable must also be testable, or else we can never assess our effectiveness
- Individuals hold designs that they espouse and designs that they actually use. The key to change is to get at designs in use or theories in use.

Argyris applies these premises to Van de Ven's model and observes that they are "consistent with normal science rules about developing theory and research. The four perspectives are teleological theory, life-cycle theory, dialectic theory, and evolutionary theory....Van de Ven then specifies some core features of the theories...that may be valid for those mind activities that are used to understand and explain. They are not valid for those activities where the understanding and explanation are in the service of action....in order for the human mind to produce actions that are observed to be unclear, it must use clear, ruthlessly programmed action-design. Imprecision is produced through precision" (pp 423-424).

In his commentary on both papers, Beer identifies the gap between the two positions as symptomatic of the problem of attempting to break the "code of change". He notes the immediate acceptance of Van de Ven's more conventional views on scientific research (in which research may be research for research sake) but the "scepticism, defensiveness, and even hostility" that greeted Argyris's view that "academics and consultants in the room were not producing knowledge that was actionable" (that is, where research must have an *action* component) (p 434-5).

Beer traces "our inability to break the code of change" to "the ambivalence of three actors- academics, leaders and consultants- to inquire into the effectiveness of their practice". He goes on to advocate "deep longitudinal inquiry" and advocates a process that "requires academics to adopt a more clinical and systems orientation to their work. It requires that they accept a common language and framework for describing organizations as systems, and that they see the evaluation as legitimate and important work...Moreover, this research will require that academics, consultants, and CEOs cooperate in the

inquiry process...***To make knowledge usable, an action science approach is needed***". (Bold italics are inserted for emphasis).

Beer then cites an action science process approach he has developed with Russell Eisenstat and implemented in "a large corporation". He claims this approach contributes to the development of an "action and descriptive theory of change". He concludes: "for progress to be made in breaking the code of change, two parallel, but equally important research streams need to be undertaken. The first stream...will produce relevant descriptive theories of organizational change... the second stream will make descriptive knowledge actionable by generating valid theories of the change process itself.... Action theories will close the... Gap between academics' and consultants' desire to help managers implement research findings and the difficulties of doing so".

Regrettably, in what is presumably a more widely circulated paper in the HBR, Beer and Nohria (refer to these two streams as theory "E" (for the rational economic business argument) and theory "O" for the more descriptive process but fail to emphasise the role of action science as the means of integrating these two perspectives.

But Beer is not the first to articulate an action-based approach to change. Obviously Argyris declares a model and a plethora of associated "organisational learning" theories and practices have been developed (see Dierkes et al, 2002).

In one of the earlier attempts to discuss AR in management, and specifically to organisational development, Cunningham (1993) describes AR as "a term for describing the spectrum of activities that focus on research, planning, theorizing, learning, and development. It describes a continuous process of research and learning in the researcher's long-term relationship with the problem". Cunningham proceeds to demonstrate in quite practical terms how AR can be linked to change management and "other organizational development practices such as strategic planning". He pays particular attention to three sequences of the change process (P73):

- Defining the need for change
- Focussing a direction and developing a commitment to the changes, and
- Implementing the plan.

A significant aspect of Cunningham's coverage is the degree to which he is able to demonstrate the application of qualitative survey attempts within the AR process. For example, he identifies the triangulation process with the AR process of gathering information from multiple perspectives (P 170).

He concludes with the observation that "(W)hat makes AR different are the practices encouraging an understanding of a real life problems, involving people in a collaborative relationship, and using grounded concepts" (P 254) and proposes the roll of AR in the resolution of a number of management dilemmas that we can still identify with today:

- Total organizational versus Departmental or Group change
- Changing people versus changing structures
- Power versus integrative strategies
- Information gathering versus facilitation
- Top-down versus bottom-up
- Rapid versus slow change.

## **ACTION SCIENCE**

In an attempt to bring AR back to its integrative roots as described by Lewin, in which three objectives were considered fundamental:

- Learning is the first and overarching objective
- Any knowledge produced should be formulated into empirically disconfirmable propositions
- Knowledge can be organized as theory,

Argyris, Putman and McLain Smith (1985) introduced the term “Action Science” - a science of human action- for two reasons:

“We would be content to use the term *action research* if it was not for two factors. First, over the years action research has often been separated from theory building and testing. Leading social scientists distinguish action research from basic research by asserting that the intention of action research is to solve an important problem for a client and not necessarily to test features of a theory....Second, many action researchers understandably conduct their empirical work by following the current ideas about standard scientific research. The dilemma is that some of the currently accepted ideas of rigorous research may be self limiting”. Argyris et al, x.

Argyris, Putman and McLain Smith’s approach is in fact an elaboration with a specific emphasis on implementation of Argyris and Schon’s two theory-in-use models (I and II). Model 1 theory-in-use corresponds to a form of bounded rationality (Simon, 1964/1976) in which people impose their own meanings on action and become dogmatic about them. Consequently, it becomes difficult for them to openly reflect on their motivations and actions and they become defensive in conversation. Model 1 is also consistent with a closed-systems view of the world in which contexts and environments are locked out (Argyris, 1983, 120).

The capability of being able to effectively reflect on actions and motivations involves the adoption of Argyris and Schon’s Model II. This model is consistent with the adoption of an open systems point of view in which changes in context are incorporated.

These two modes of learning have become popularised under the headings of single and double loop learning (Argyris and Schon (1974, 1978, and 1996). An excellent summary of the Action Science perspective is provided by Argyris (1983).

## **CHECKLAND’S SOFT SYSTEM METHODOLOGY (SSM)**

The AR component of Checkland’s SSM (Checkland, 1981; Checkland and Scholes, 1990) has emerged as the most important aspect of SSM. Indeed, it may be argued that the input-output, mechanical transformation view sitting behind the CATWOE and rich picture processes is actually inconsistent with the open-systems, emergence view that sits behind the learning process defined by Checkland.

Checkland and Holwell (1997,1998) recognise this shift of emphasis by giving the AR component the central place in their methodology for information systems work.

Although Checkland (1981) does not make reference to Action Science and the contributions of Argyris and Schon etc, Checkland and Holwell 1997,1998) use Argyris et al (1982) to identify the “crucial elements in a research approach which works within a specific social situation...

- A collaborative process between researchers and people in the situation
- A process of critical inquiry
- A focus on social practice, and
- A deliberative process of reflective learning”. (Checkland and Holwell, 1997, 12).

The important contribution that Checkland and Holwell make is the manner in which they articulate the difference between the traditional scientific method with its focus on the replication of results, and AR with its acknowledgement that, quoting from Keynes, social science is not dealing with phenomena that are “homogeneous through time”. That is, in social science we are dealing with open systems. Checkland and Holwell go on to describe in detail a generic action research cycle that incorporates both single and double loop learning, the double loop reflection being based on three aspects:

- The framework of ideas adopted, F
- The methodology used that is based on F, and
- The identification of the area of concern to which this framework may be applied, A.

Reflecting on some 25-30 years experience with the application of the SSM action science model, Checkland concludes that a primary distinction between traditional science and action science is that in traditional science knowledge is progressed through the replication of *experiments*, but in action science, knowledge is progressed through the replication of *process*. (Checkland, 1999).

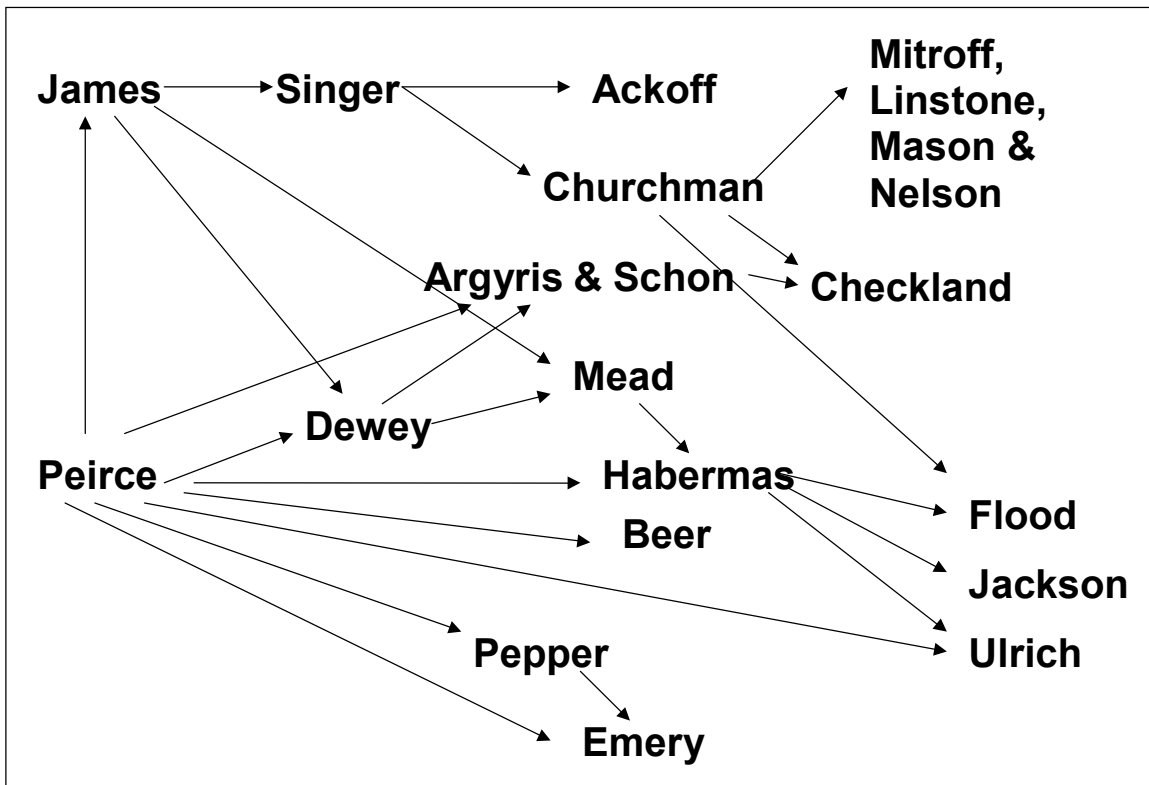
Checkland and Holwell (1997) make this same point in their reference to the need for action researchers to increase their appreciation for a “declared epistemology and hence a recoverable research process”.

### THE CONTRIBUTION OF C.S. PEIRCE

In attempting to draw some conclusions from the preceding discussion of AR in management, it is instructive to reflect on the contribution of C.S. Peirce. Peirce is the founder of American pragmatist philosophy, the primary influence on noted philosophers including William James, Arthur Singer, John Dewey and Herbert Mead who had a major influence on action theory, learning and research. In particular, the lines through Dewey and Singer place a special emphasis on the development of epistemology and learning theories that have had a direct influence on later scholars like Argyris, Churchman, and Ackoff. Emery acknowledges a direct link to Peirce’s thinking.

A map of the known relationships based on citations and direct references to personal relationships is provided in Figure 4. For example, Argyris et al, acknowledge Peirce’s contribution to the concept of a ”community of inquiry”, and Dewey’s involvement with Peirce at Johns Hopkins University as a student and colleague is recounted by Dalton, 2002.

**Figure 4: The Influence of Peirce on Systems Thinkers and Action Researchers**



In specific consideration of Peirce to AR, it is noted that while many social theorists have discussed pairs of combinations of the three themes- action, research and management, few have contributed to all three. For example, Weber links action theories to economic organization and hence management (Weber, 1947), but appears to say less about research. Peirce had something significant to say about each of the three terms being discussed. In doing so, he picks a well-defined path through the many of the confusions alluded to earlier. In essence this is achieved by the adoption of a distinct worldview (continuity) and a rigorous approach to learning and the creation of knowledge.

In his pragmatic maxim, Peirce (1877, 1878) associates meaning with the conception of action - the pragmatic maxim is the “doctrine concerning the meaning, conception, or rational purport of objects, namely, that these consist in the effects which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object”. William James interpreted this as implying that “beliefs are rules of action”, a statement that Peirce saw as an oversimplification, but one that we can recognise as at least pointing us towards the linkage between belief and action.

With respect to “research” Peirce again comes to our aid with his articulation of modes of inquiry and rules of inference. Peirce describes inquiry as the “process of struggle to pass from a state of doubting to a state of belief” (Hausman, 1993, p 20). Peirce describes this process as one involving a “community of inquiry”, and so places inquiry (and research) as very much concerned with a social process, and, indeed, a process of social action and interaction. In this respect Peirce anticipates the arguments of Thomas Kuhn (Kuhn, 1970).

Peirce’s strict application of logic to the inquiry process as articulated in his three modes of inference- abduction, deduction, and induction- introduces an evolutionary epistemology that pre-empted Popper and, as we will argue later, establishes the logical foundations for action research.

Peirce, at least as interpreted by Beer (1996), also places an interesting and productive insight into decision-making, and hence management.

Peirce argued that there were four ways of “fixing belief” (decision making) (Peirce, 1877):

- The method of tenacity- a “viewpoint capriciously formed” that “(G)radually becomes a habit of thought” (Beer, p 17).
- The method of authority- Peirce described this approach in what Beer described as “the naïve point of view with some charm”: “When complete agreement could not otherwise be reached, a general massacre of all who have not otherwise be reached, a general massacre of all who have not otherwise be reached, a general massacre of all who have not thought in a certain way has proved a very effective means of settling opinion”.
- The method of apriority- this involves logical thought based on a set of axioms that appear self-evident to some, but not necessarily to others. Within a closed group, challenging such assumptions is considered a “taboo”. (Beer cites political parties as being susceptible to this mode of decision making).
- The method of science- in this approach, Peirce emphasises the importance of rigorous process- “rigour is a precise formulation of method: something clear and definite, testable and repeatable” (Beer, p29). Indeed, Beer emphasises that the “method of science *is* method.....It follows that we ought not to have called the three modes of thinking already described ‘methods’ at all. They are habits of thinking, and the most flattering word we can use to describe them is ‘procedures’”.

Peirce’s emphasis on the adoption of a social context to science and his advocacy of an evolutionary epistemology that provides a broader approach to science than simple objectivist approaches encompasses the fundamentals of both Kuhn and Popper<sup>5</sup>. In simple terms, Peirce’s adoption of an open system, contextual view (Pepper, 1942), provides the basis to the underlying logic of AR.

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<sup>5</sup> Churchland, 1989, provides an insightful summary of contemporary developments in the philosophy of science, including a discussion of the contributions of Peirce, Popper and Kuhn.

In this sense, many links can be made to key elements of the previous discussion including the reference to Keynes’s observation regarding non-homogeneous contexts and the logical outcomes of adopting this worldview as represented by the action science methodologies described by Argyris et al, and Checkland and Holwell’s description of AR.

It will not be surprising to note that, although dealing at a high level of aggregation, there is a correspondence between the key characteristics of AR described by Hilary and Bradbury, and the modes of scientific inquiry proposed by Peirce- see Table 1.

**Table 1: Comparison of Reason & Bradbury’s View of AR with Peirce**

<b>Reason &amp; Bradbury</b>	<b>Peirce</b>
Improve the human condition	Resolution of doubt
Practical outcome	Pragmatic maxim
New forms of understanding through reflection and experience	Three modes of inference
Participative processes	Community of inquiry

## CONCLUSIONS

This paper starts with a discussion of business action learning, expands this to a discussion of action research and hence action science. This journey reflects two things:

- A desire by serious researchers in business and management to develop an epistemology that meets the needs for academic for scientific rigour while being consistent with the fundamental nature of organisations as open-systems. To make this shift, one must accept that replication of experiments is a characteristic of closed systems research, while open systems require the replication of process.
- Action research as developed in the context of management and articulated by contributors such as Revons, Argyris, Schon, and Checkland, provides a rich set of practical tools that allow us to convert theory into sound practice.

It is further speculated that the basic characteristics of AR can be found in the philosophical architectonic of American pragmatist philosophy as defined by C.S. Peirce and implemented in learning theory by later pragmatists, particularly Dewey.

Acceptance of this latter framework provides AR with at least a rigorous foundation as conventional science. Indeed in some respects, following Peirce and Kuhn, classical science when viewed as a process of inquiry, may be considered as essential complementary components of the more general field of action science.

## REFERENCES

- Argyris & Schon (1996) *Organizational learning II*. Reading, Mass: Addison Wesley
- Argyris & Schon 1978 *Organizational Learning*. Reading, Mass: Addison Wesley
- Argyris (1983) *Action Science and Intervention in Journal of Applied Behavioural Science*, Vol 19, 1983, pp 115-40
- Argyris and Schon 1974 *Theory in Practice*. San Francisco: Jossey-Bass
- Argyris, Putman and McLain Smith (1985)
- Beer & Nohria 2000 (a) *Breaking the Code of Change*. Harvard: HBS Press
- Beer & Nohria 2000 (b) *Cracking the Code of Change*. In HBR, May-June, 2000
- Beer 1996 *Decision & Control*. Chichester: Wiley
- Boisot 1998. *Knowledge Assets*. New York: OUP
- Boshry (Ed) *Action Learning Worldwide*. New York: Palgrave, 2002
- Boshry (Ed) *Business driven action Learning*. London: Macmillan, 2000
- Britton & McCallion 1994 *An overview of the Singer/Churchman/Ackoff school of thought*. In *Systems Practice* p 487-521
- Burke 2001. *Action Learning and Futures in www. Metafuture.org*
- Checkland & Holwell 1998 (a) *Action Research: Its nature and validity*. *Systemic Practice & Action Research*, Vol 11, No 1, 1998
- Checkland & Holwell 1998 (b) *Information, Systems and Information Systems*. Chichester: Wiley
- Checkland & Scholes 1990 *Soft Systems Methodology in Action*. Chichester: Wiley
- Checkland 1981 *Systems Thinking, Systems Practice*. Chichester: Wiley
- Checkland 1999 *Plenary address, 17<sup>th</sup> International Conference of the System Dynamics Society, Wellington, NZ.*
- Churchland. 1986 *Neurophilosophy*. Cambridge, Mass: MIT Press, Ch 6
- Cunningham 1993. *Action Research & Organizational Development*. Conn: Praeger
- Dalton 2002 *Becoming John Dewey* Bloomington: Indiana University Press
- Dierkes, Berthoin Antal, Child, & Nonaka. *Handbook of Organizational Learning & Knowledge*. New York: Oxford, 2003
- Hausman 1993 *Charles S. Peirce's Evolutionary Philosophy* New York: CUP
- Kuhn 1970 *The Structure of Scientific Revolutions*. 2<sup>nd</sup> ed. Chicago: Univ of Chicago Press
- Lessem, Ronnie. *Business as a Learning Community*. London: McGraw Hill, 1993
- Peirce 1877 *The Fixation of Belief* Ch 7 in Houser & Kloesel (Ed) *The essential Peirce Vol 1* Bloomington, Indianapolis: Indiana Univ Press, 1992
- Peirce 1878 *How to Make our Ideas Clear* Ch 8 in Houser & Kloesel (Ed) *The essential Peirce Vol 1* Bloomington, Indianapolis: Indiana Univ Press, 1992
- Pepper 1942 *World Hypotheses* Berkeley: Univ of California Press
- Reason & Bradbury 2001 (a) *Handbook of Action Research*. London: Sage
- Reason & Bradbury 2001 (b) *Introduction: Inquiry and Participation in Search of a World Worthy of Human Aspiration*. Ch 1 in Reason & Bradbury 2001 *Handbook of Action Research*. London: Sage
- Revons 1971 *Developing Effective Managers*. London: Longmans

Revons 1979 Action Learning London: Blond & Briggs

Revons 1982 The Origins and Growth of action Learning Bromley, UK: Kreiger

Revons 1998 The ABC of Action Learning London: Lemos & Crane

Simon 1964/76 Administrative Behaviour NY: Macmillan

Weber 1947 Economy and Society Vol 1 & 2 Berkeley: Univ of California Press

## Appendix

### Business Driven Action Learning - Examples based on Boshyk, 2000. 2002

Company & Program Title	Goal	Key Features	Program Description	Outcomes
<b>DaimlerChrysler:</b> Action-Orientated Learning. Ref: Boshry (2000), Ch 1.	To develop a common way of thinking about strategy. Development of an integrated system of value creating activities (the business model)	Focussed on Actions designed to: <ul style="list-style-type: none"> <li>• Win in the present, based on current success factors</li> <li>• Take advantage of discontinuities</li> <li>• Build capabilities for the future</li> </ul> Business simulations. Cascaded through three management levels with each level mentoring the next level includes distance learning component.	Applied over 2 years to over 100 Mercedes-Benz managers (focus on top 3-5% of managers) plus roll out across organisation. Three modules: Global Leadership program for top managers (a 4-6 week program delivered by a business school; includes field trips). Developed key business strategies; acted as sponsors & coaches to middle managers who were allocated strategic projects and who also undertook a Customized Executive Leadership Program. An Executive MBA for front-line managers was established using videoconferencing to present specialist lectures etc., 1-night a week class attendance. Included class assignments based on the strategic projects undertaken by middle managers and mentored by middle managers	Demonstrated success in the global business transformation resulting from the merger with Chrysler
<b>Dow Chemicals:</b> Leadership Development Network (LDN) Ref: Boshry (2000) Ch 3	Respond to globalisation and as a follow-up to previous quality initiatives and re-engineering. Communicate Strategic Blueprint	Use of Root interactive Learning Maps as a basis for communication and learning (c/w “rich pictures”).  Developed maps for: Global industry Dow strategy Economic profit - value creation. Performance	Commenced in 1993 with the Strategic Blueprint. LDN consists of 3000 Dow managers. Met once per year to participate in an interactive learning experience, facilitated by selected Dow senior leaders. Participants then charged with creating a “shared vision” with rest of organisation (40,000 employees). Conducted over 6 weeks in 2-day sessions in 5 global locations. LDN 98 in full swing at time of writing.	Global employee opinion survey revealed: 15% increase in understanding of Dow’s business. 10% improvement in making a clear link between individual roles and corporate direction. 9% improvement in appreciation of Dow’s efforts to inform employees. 4% improvement in alignment of

Company & Program Title	Goal	Key Features	Program Description	Outcomes
		Purpose values & culture Creating long-term shareholder value Accelerating value growth		personal goals with the business. Participants in the learning experiences had a three times higher buy-in to corporate strategy.
<b>DuPont:</b> Leadership for Growth (LFG) & Leader Labs (for frontline supervisors),	Align and mobilize senior managers and build capability for profitable growth- a change from “value liberation” (cost cutting) to “value creation” (growth) strategies.	Strong top-down involvement in selection and endorsement of projects to be explored over three week sessions. Role of team coaches. Teams selected to be as diverse as possible. Emphasis on emergent behaviour. Involvement of external stakeholders. Members of a given project team tend not to include experts in the areas selected - found to enhance learning.	<b>LFG:</b> 3-week session for 400 senior managers combining classroom work, personal/team coaching & activity-based learning through company projects. Week 1: Teams assemble; discuss projects (jump to solutions, but stumble!), some class work; coaches introduced and reflective practices introduced. Week 2: Devoted to projects including discussions with stakeholders (travel provides opportunities for team members to bond). Week 3: Plenary meetings with executive VPs and outside stakeholders, but these conflict with desire to work on project. Recommendations presented on final day to sponsors, VPs etc. <b>Leader Labs</b> - First-line supervisors AL program established in 1997 as a follow-up to the above. Core modules followed by learning teams of 6-8.	Long-term relationships formed. Formation of trusted business networks. Strong acceptance and follow-up of project recommendations. Some difficulties in implementation of Leader Labs AL teams because of strong exiting, but traditional experience with training and teams (but not “learning”). Participants prefer to work on topics within their own domains- these sometimes lack corporate significance, while corporate projects can appear too large/overwhelming.
<b>General Electric</b> Executive AL Programs	Executive development linked to globalisation and business growth strategies.	Learning shifted from passive (e.g., based on cases studies) to active (AL) Programs run around themes. Programs are global. Movement away from framed around visiting “stars”. Emphasis on coaching, less teaching.	4 week programs Week 1: Intro; global env; leadership survey; team building; academic sessions related to current business issues & course theme. Week 2: More academic thematic sessions; team and project process; project briefing; project planning and coaching. Week 3: Field data gathering. Week 4. Report preparation; report	Despite difficulty of measuring the return on investment, GE has concluded that AL programs “are the way to go... Presidents are convinced they work”. Approach used successfully over 10 years. Re project benefits, analogy with commodity futures is drawn - likely to lose your

Company & Program Title	Goal	Key Features	Program Description	Outcomes
			rehearsal/coaching; report presentation; feedback session.	money 90% of time, but when you win, you “can win big”. Examples of successful initiatives -, GE’s 6 Sigma program; 1990s growth strategy; formation of GE Capital India (against wishes of GE Capital CEO).
<b>BOSNO program (Holland)</b> (Management development training program) Heinekin, Shell, Heidemij, Hoogovens, & Philips etc (1975); now 11 member companies.	Management development - extend the horizons of managers without sacrificing close integration of training with their own company needs.	Consortia-based and based on AL. Operating over 20 years, but approach has changed towards hands-on experiential learning. Strongly influenced by the Revons model.	New program each year - Oct – May. Companies enter teams. Each team undertakes an AL project. 5 teams per program. If more than 5, run parallel programs. Each program includes five 3-day plenary sessions. Each participating organization provides its own team coach. Annual subscription to BOSNO Foundation is EUR 1125, participation fee per team is EUR 2700. Each participant expected to spend 30-35 working days on program.	Evaluated at high level through plenary discussion between all participants and 2 BOSNO board members and at individual level through annual appraisal of team members. AL approach allows flexibility and constant update in management approaches - looking at current problems using current practices. Program is rated as being “highly successful”.
<b>Hoffman La Roche and Boehringer</b> Executive Management Program (EMP)	Form one company around: Short term: Sell what’s available today: (Cash). Mid-term: Products (Markets). Long-term: Patents (People).	Implemented in conjunction with Cranfield School of Management, UK.	Several modules focusing on strategy and finance/organizational and individual change/business simulations to experience whole business effects/globalization and working across cultures. A “learning conference” held at end of each program to report on outcomes and review. Held 4-6 months after the EMP and included into a knowledge management strategy.	64 managers across 21 countries have participated to date. Formally evaluated with satisfaction scores rising from 70% to 85% over three programs. In hindsight, didn’t really achieve the original goals, but participating managers found they could handle the impact of acquisition more confidently.

<b>Company &amp; Program Title</b>	<b>Goal</b>	<b>Key Features</b>	<b>Program Description</b>	<b>Outcomes</b>
<b>IBM</b> Global Executive Leadership Program	Enhance shared values and understanding of IBM's strategic directions (post 1993 appointment of Lou Gerstner). Build global networks and facilitate IBM teamwork.		2-week program	
<i>Further work possible!</i>				
<b>Johnson &amp; Johnson</b>				
<b>Motorola</b>				
<b>Philips Electronics</b>				
<b>Siemens</b>				
<b>Volkswagen</b>				
<b>Lilly</b>				
<b>Cybertex</b>				
<b>Canadian Public Service</b>				
<b>World Council of Churches</b>				
<b>Merck, Hong Kong</b>				
<b>BP</b>				
<b>Citibank</b>				
<b>Skania</b>				
<b>HP</b>				