Research on the Alexander technique.

 From simple observations to explanatory theories – a reasoned, logical approach to the growth of knowledge according to Karl Popper

This article originated as a lecture presented at the STAT Conference 2003 at Heriot-Watt University, Edinburgh. It is based on the book *Objective Knowledge An Evolutionary Approach* by Karl Popper.1

Two early arrivals in the Heriot-Watt lecture theatre read this title on the screen and one exclaimed “Oh, that’s rather off-putting, perhaps I should leave now!” “Please don’t do that, I think you will enjoy what I have to say.” At the end they thanked me.

Karl Popper (1902-1994) was a philosopher interested in the way that a reliable body of knowledge and theory becomes established within a field of study. How does research in a new subject area begin? What do the investigators have to do, in the broad sense? In other words, what is the general procedure? How do (or should) those engaged in research decide which results and theories are best or nearer the truth and worth retaining and which results and theories to discard? Is it ever possible to prove that a theory is true? Deep questions indeed.

**During the past forty years Popper has had an enormous influence on scientific thinking and research methodology throughout the world. Many of his views are widely accepted in science and in other fields. Any of us concerned with research related to the AT, whether engaging in the research process itself or just interested in reading the results, will find his advice and conclusions helpful.**

**The initial stages of research**

A problem or question is the usual stimulus that begins an investigation,whilst commonsense is at the basis of any worthwhile study. The first stage is the making and collecting of simple, tentative observations. In our work the observations of self and of others consist largely of sensory non-verbal information private to each teacher. Popper defines observations known only to the observer as “**subjective**”.

In order to proceed to the next stage of an investigation, the subjective sensory data has to be expressed in words. Translating sensory information into words can be daunting and difficult but it is a valuable and interesting challenge. The advantages are several; **searching for the best words makes us question our observations in detail and helps us become more astute observers**; appropriate words can be recorded and perused later, allowing us to engage in mental reflection and revision and become more precise. When we have chosen words that best express our observations, we can discuss and test them with close colleagues and revise them again. Any of us can engage in this activity.

Simple observations are best framed as formal “observation statements” or “test statements” by avoiding subjective or psychological terms such as ‘belief’ or ‘impression’. **Making the statements and theories impersonal allows them to have a life of their own, separate from their originator, and permits impersonal discussion.**

Telling others about our observations is the simplest form of publication and an important professional step. In Popper’s definition, published observations are “**objective**”. This implies that the **observation statements can be tested and discussed by others**. Publication in written or printed form allows even wider critical discussion, testing, reasoned argument and debate by all peers (see below).

 By adopting Popper’s definitions and advice we can translate our “subjective” observations into “objective” observations and publish them, but it takes a certain maturity to cope with the inevitable and necessary debate and dissection of one’s own observations and cherished words.

 Members of the Edinburgh audience were invited to join in an activity by following directions, making observations and then expressing them in words.

The general advice was to adopt an open-minded attitude of non-attachment, to set aside prejudice and expectation and just observe what happens. No observations should be thrown out at this stage. Differences of response are interesting and stimulate a search for explanations.

 **The instructions were**:

Form pairs, with one person acting as teacher and the other as pupil. Both stand and give your directions. Teachers push gently but firmly forward on back of your pupils’ shoulder. What happens? Teachers release hand contact.

Now with particular attention to eye alertness, focusing on objects, both teachers and pupils think of the floor beneath your feet sloping slightly back and down.

Attend to the upward push from the floor under your heels. Continue your usual directions. Think your upper molars being high above the push under your heels.

Teachers resume pushing gently but firmly forward on shoulder of your pupil.

What happens? Have any changes occurred? Exchange roles.

Express observations in words

**Comment recorded on the flip chart was:**

Morning audience: most experienced increased strength when actively directing with eyes focused.

Afternoon audience: directing with eyes alert was accompanied by increase in overall strength (increase in overall muscle tone) and a sense of security.

The forward push on a shoulder stimulated resistance in many ‘pupils’ while others rocked forward or went up on their toes. Some reported increase in back muscle power with greater freedom of breathing.

Lack of time prevented the writing of more considered formal observation statements.

You may raise the problem of the unreliability of sensory appreciation as did some members of the audience. How are we to know that the observations are of any value? Learning and applying the AT in our lives brings about an improvement in the accuracy of the sensory register. If this were not so, how could we as teachers place any reliance on the hand contact feedback we receive from pupils? Any slight distortions of the sensory register that remain will differ between teachers. In fact Popper states that [sensory] **“subjective knowledge is part of a highly complex and intricate but (in a healthy organism) accurate apparatus of adjustment---.”**

Observations that are carefully reported and common to many teachers are likely to be unaffected by sensory inaccuracy while observations reported by a minority of teachers may also be accurate. There is no need to be fearful of contributing an observation statement ‘because it might be wrong’, for the testing processes outlined below will detect any failings. All observations are of value and necessary to the growth of knowledge.

**What kind of research should take priority?**

In my view the first need is to establish a body of evidence expressed as formal observation statements, made by teachers working on themselves and with each other, observing and recording the immediate effects of attending to the self, inhibiting and directing in various ways. The accumulated results would allow us to state the early responses to the projection of AT thoughts and would provide the necessary evidence.

A study of possible ways of recording and assessing change in trained or trainee teachers or in pupils might be undertaken. Many observations would be made and analysed. The listing of agreed observation statements on the STAT web site could attract the attention of university based researchers with an interest in theoretical research and lead to collaborative research projects.

Clinical research trials, such as thatcurrently investigating the value of lessons in the Alexander technique for NHS patients suffering low back pain2, are information gathering exercises that provide new observations and evidence. The analysis and consideration of results can suggest new lines of enquiry.

**Formulation of theories**

**The next stage in research is the formulation of theories to attempt to explain the observations.** Explanatory theories are sometimes referred to as hypotheses but in fact they are all informed conjectures or guesses. Even the established ‘Laws’ of Physics are informed guesses. Following from the practical exercises in observation referred to above, a theory might be sought to explain **why the projection of AT directions is followed by an increase in strength or muscle tone or a sense of security**.

When setting out to formulate a theory, the first task according to Popper, is to “get better acquainted with the problem. But how? My answer is very simple: by producing an inadequate solution and by criticizing it. --- if we have worked on a problem long enough, and intensively enough, we begin to know it, to understand it, in the sense that we know what kind of guess or conjecture or hypothesis will not do at all, because it simply misses the point of the problem, and what kind of requirements would have to be met by any serious attempt to solve it. In other words we begin to see the ramifications of the problem, its sub-problems, and its connection with other problems. (It is only at this stage that a new conjectured solution should be submitted to the criticism of others, and perhaps even published.)”

This quotation shows us that Alexander teachers will have to collaborate actively with each group of researchers from outside our profession, in order to ensure that inappropriate conjectures are ruled out of consideration.

**Testing and critical discussion**

Both published observation statements and explanatory theories must be subjected to critical discussion and reasoned argument by peers, i.e. by the other members of the profession, who devise ingenious methods and severe tests to attempt to find flaws in the statements and theories and try to refute them. Negative instances or counter examples are sought. A theory is tested in all sorts of initial conditions, and by combining it with other theories, by making predictions and having expectations based on the theory. If the real outcomes and predictions disagree, the theory is refuted, at least in its present form, and new theories sought.

**This harsh treatment is necessary to eliminate the weaker statements and theories, to get nearer to the truth and to ensure that only the best corroborated and most robust survive.** These statements and theories are provisionally accepted with the understanding that observations may be revised, new ones made and that the best theories of today are likely to be replaced by better ones tomorrow.

With the passage of time, explanatory theories become more inclusive, contain more information, link several observation statements and relate the information and theories to knowledge published in books, journals etc. Again the theories are subjected to harsh tests to attempt to find flaws.

**The difficulty in recognising true theories – the impossibility of proof**

**Endless repetition of the whole process is necessary because there is no way of proving that a theory is true.** By the elimination of error and falsehood we can gradually get nearer to the truth, but cannot *prove* that we have reached it. But critical discussion and rigorous testing can (sometimes) establish sufficient reason to claim that a theory is, at present, the one nearest to the truth.

**Popper has shown the fallacy of the earlier method of accumulating positive instances or positive results and using them as “proof” of the accuracy of an observation and of any inferences or conclusions drawn from it.** All that can be summoned in favour of a theory is the evidence, including positive instances, and “degree of corroboration”3. Proof is not possible.

**Summary**

The most robust theories rest on a large mass of simple observations and the great amount of work and thought involved in testing and making sense of them. The volume of work involved from the beginning to an advanced stage of the process can be represented as a truncated pyramid with the simple observations, including the flawed ones, occupying the base of the pyramid. Above them lie critical discussion, testing, simple theories, including the flawed ones. Above these are tests, criticism and refutation. On the next layer are the more inclusive theories and above them severe tests, criticism and refutation. On the top layer is provisional acceptance of the most robust theories. The open top of the pyramid indicates that the end of the process is never reached.

A fascinating journey lies ahead.

TRUNCATED PYRAMID

References

1. Popper, Karl R *Objective Knowledge An Evolutionary Approach* , Oxford University Press, 2nd edn. 1979, chapters 1, 2, 7

2. A randomised factorial trial for patients with recurrent and chronic back pain of GP exercise prescription, the Alexander Technique, and Massage. Results expected 2005. Contact Professor Paul Little, Aldermoor Health Centre, University of Southampton.

3. Popper ibid, page 18. The degree of corroboration of a theory is “a concise report evaluating the state (at a certain time t) of the critical discussion of a theory, with respect to the way it solves its problems; its degree of testability; the severity of tests it has undergone; and the way it has stood up to these tests.”