

## Introduction to TCS Theory

Submitted by Sarah Fitz-Claridge on 5 September, 2003 - 07:49

*Posted on the TCS For Beginners List on Fri, 26 May, 2000*

**Sarah Fitz-Claridge** (<http://www.fitz-claridge.com/>)

TCS stands for Taking Children Seriously. It is a radically new and different idea about child-rearing. Its most distinctive feature is the idea that it is both possible and desirable to bring up children entirely without doing things to them against their will, or making them do things against their will, and that they are entitled to the same rights, respect and control over their lives as adults. TCS is an educational philosophy in the broadest sense, in that it is about the conditions under which human minds do and do not thrive, and about how people learn and how knowledge is created, and it has far-reaching implications for all relationships and for all areas of life. It is a whole new world-view. It is the first and only educational philosophy in existence which is not inconsistent with the prevailing idea of how knowledge grows, and with other ideas which are widely held in other spheres.

In the distant past, it had been thought that the way science proceeds is by inducing general theories from particular observations, hence the 'apple falling on Newton's head' story. But apples have fallen on heads throughout history without imparting anything other than pain and perhaps the odd maggot. Could it be that it would take more than one bump on the head to induce Newtonian physics in some cases? Maybe some need more data than others, or need repeated instances of the observations in question? How can you be sure that the apple won't fly upwards instead of dropping next time? If knowledge pours into us via our senses like water into a bucket, surely we need only open our eyes and observe the world to learn its secrets? We have around us all the data in the world, literally, so why are scientists still struggling to come up with, say, a theory of quantum gravity? Is the only reason non-suicidal persons avoid jumping off Mount Yosemite without a parachute that they have induced from past data that the result of doing so would be a sticky end? But why should the future be like the past? David Hume pointed out that the commonsense theory of knowledge (i.e., that we learn by generating theories directly from experience or generalising 'input' from outside) does not make sense. Yet we do gain knowledge! That raised the question, how can we possibly gain it?

These questions had been exercising philosophers for a century or two before Karl Popper resolved the issue in a hitherto unexpected way. He pointed out that such questions rest upon false premises, that the Baconian view of scientific discovery is entirely mistaken, and that it does not proceed from data to theory at all. Instead, Popper argued, science proceeds from problems to solutions through what he called 'conjectures and refutations':

*"The growth of knowledge proceeds from old problems to new problems, by means of conjectures and refutations."*

– Karl Popper, *Objective Knowledge* (<http://www.amazon.com/exec/obidos/ASIN/0198750242/takingchildrseri>), page 258.

Scientific discovery always starts with a problem – something which gives rise to human thought – such as a conflict between two theories, a paradox or anomaly. Scientists then make bold guesses (or 'conjectures') aimed at solving the

problem and explaining the anomaly. They then attempt to refute the guess(es) using forms of criticism including philosophical argument and, these guesses being scientific theories, experimental tests. The conjectured theories which fail to stand up under criticism are then rejected. The conjecture which survives the critical process is adopted tentatively as the solution to the original problem, superseding the problematic theory or theories.

This new theory is highly unlikely to be The Final Truth, but it does appear to have solved the problem: it does appear to be truer than the theory it has superseded. It might turn out to be false, but it is the best solution currently available. Sooner or later, someone will find that the new theory is problematic, and the whole process will start again, with scientists making bold conjectures aimed at solving the problem, and so on. In other words, science does not start from firm foundations but inches blindly and fallibly towards the truth by conjecture and the elimination of error, through rational criticism. Thus, knowledge is not certain truth. Popper showed that objective knowledge is attainable but certainty is not. Knowledge is always conjectural: it always remains open to criticism .

Scientific theories are those theories which are empirically falsifiable, that is to say, theories which could in principle be refuted through experiment. For a theory to be empirically falsifiable, it has to be empirically distinguishable in some way from its rival. If it is not – if both theories make the same predications – experiment cannot distinguish between them. But although non-scientific theories cannot be refuted experimentally, they can be refuted through other forms of criticism, such as philosophical argument. Experimental testing is just a special form of criticism, particular to science.

What Popper has done is to give a devastating critique of various false ideas about knowledge. The prevailing ideas about parenting and education are full of these mistakes, and David Deutsch realised that Popper's criticisms apply just as much in educational theory (about which Popper says little) as they apply to the growth of knowledge in science (about which he has written several books).

The structure of Popper's theory of the growth of knowledge is inherently universal, that is to say, the underlying logic of the process necessarily applies to all forms of knowledge in all realms, not just scientific knowledge. It applies as much to the growth of children's knowledge as it does to the growth of scientific knowledge. It applies to problems quantum physicists are wrestling with but it also applies to simple disagreements within families. It applies to biological evolution, the evolution of British political institutions, and to the evolution of our society's ideas about morality.

It applies not only in the case of a scientist making an exciting discovery which represents a valuable contribution to human knowledge as a whole, but also in less grandiose, more mundane cases. For example, finding a repairman who will unblock your drain without leaving a trail of fetid footprints on your carpet is also problem-solving. Deciding which television programme to watch is problem-solving. Learning to read is problem-solving. Even such mundane things as discovering (through trial and error involving no conscious thought) the best way to get the washing-up done, are problem-solving.

To the extent that knowledge grows, it grows this way. The underlying logic of this process applies to all types of knowledge, whether new to the individual only (as the English language is new to a baby who is learning it) or new to the human race as a whole (for example, a new idea in science). The knowledge of how to read is not new to the person helping a child learn to read, but it is new to the child. The individual human mind can't have any way of distinguishing between hitherto undiscovered knowledge and knowledge which is merely new to the individual mind. So the same logical process must apply to both the growth of 'old' knowledge in a 'new' person and of new knowledge in an old person!

Every knowledge-creating system – such as a discipline or field (such as science), a community, a culture or sub-culture, a family, or an individual mind – creates knowledge through conjectures and refutations and in no other way. To the extent that individuals are learning, it is by conjectures and refutations. The alternative to learning by conjectures and refutations is not a different kind of learning but no learning at all.

There are many different ways of describing overt behaviour associated with learning: 'imitation', 'learning by having it explained', 'learning by doing', 'absorbing ideas from television'. People sometimes speak of 'visual learners', 'auditory

learners', and suchlike. These descriptions refer to the overt content of the learning process, not the process of learning itself. The underlying logic of the learning process is identical irrespective of the overt behaviour. Consider the implications of knowledge through conjectures and refutations for the growth of individual knowledge. To say that some people learn 'visually' while others are 'auditory learners' grossly underestimates the complexity of the human mind. Every individual is unique. Individuals are making conjectures and refutations about how to solve problems too, and that is why one person might like 'learning through having it explained' whilst someone else might shrink from that, and prefer reading. Whether an individual prefers the first or the second is a matter of personality, the individual personality having been formed through conjectures and refutations.

Theories do not have to be conscious, or explicit, or human. Biological evolution is a process which creates non-human knowledge incorporated in genes. And the creation of an individual's personality is largely unconscious and inexplicit. Young children learning to speak are not, most of the time, making conjectures and eliminating errors consciously, but are nevertheless following this same pattern. Their behaviour and learning does embody conjectures and refutations – just as less deep scientific theories such as Newton's are replaced by theories having greater explanatory power, such as Einstein's. Most of their learning is going on unconsciously. Indeed most human growth of knowledge occurs unconsciously and tacitly. The idea of unconscious and inexplicit human knowledge may be counter-intuitive but it is much more similar to conscious human knowledge than the knowledge embodied in genes is similar to either of those.

This is a deep insight into all types of knowledge-growth or problem-solving, all improvement, all learning.

Even perception itself embodies conjectures and refutations. It used to be thought that the mind passively-receives sense data, but that is now known to be false.

*"I contend that there is no such thing as instruction from without the structure, or the passive reception of a flow of information which impresses itself on our sense organs. All observations are theory-impregnated. There is no pure, disinterested, theory-free observation."*

– Karl Popper: pages 8-9, ***The Myth of the Framework***

***(<http://www.amazon.com/exec/obidos/ASIN/0415135559/takingchildrseri>)***

When you are observing something, first you are wondering what you are observing (problem), then you quickly make a guess (a conjecture), which you then criticise in the light of the visual information you have and either refute and reject or tentatively adopt until some further information comes to light which you conjecture refutes your working theory. There is no such thing as theory-free perception or thinking of any kind.

The reason this seems counter-intuitive is that most of the conjectures and refutations about what you are observing (or hearing, feeling, smelling or tasting) go on unconsciously and inexplicitly and quickly become unproblematic. That is to say, the conjectures and refutations terminate when the theory of what is being observed no longer seems inconsistent with other knowledge.

Educationalists and child-rearing experts have until now remained in the Dark Ages of theories of knowledge, assuming the truth of ideas which have long ago been thrown out as false in the field of science. They have appeared to assume that the minds of their charges are like passive buckets into which knowledge can be poured through their senses. Popper called this idea of 'knowledge' impressing itself upon passive minds the 'Bucket Theory of the Mind' but given some parents' theories of how to help their children improve, he might just as well have called it the 'Buttocks Theory of the Mind'.

Minds are not like buckets passively receiving data, any more than they are like buttocks passively receiving blows. Minds are more like searchlights than buckets: they are actively creating theories, criticising them and rejecting those which fail to survive criticism, as in the process I have described. Making knowledge is an active, creative process.

A child's mental growth is, like scientific research, a knowledge-creating process initiated and carried out by the individual child, with the help of others. Because it is a knowledge-creating process it cannot be planned in advance even for one child, let alone for children in general. Its course cannot be predicted, nor can its objectives and its methods. All these are new, and different, for each child. For the same reason education, like scientific research, is not, and cannot be, something that is done to the child by others. Anything of that form, including conventional child-rearing and almost all 'teaching' as normally understood, is not education but an impediment to education.

If knowledge is to grow, it can only grow through creativity, reason and open criticism, and any practice whatsoever that does not satisfy the criteria for being a truth-generating practice will fail to approach the truth, or impair other truth-finding processes that may be occurring.

*"Thus we begin with a vague starting-point, and we build on insecure foundations. But we can make progress: we sometimes can, after some criticism, see that we have been wrong: we can learn from our mistakes, from realising that we have made a mistake."*

– Karl Popper: *Objective Knowledge* (<http://www.amazon.com/exec/obidos/ASIN/0198750242/takingchildrseri>), page 34

Karl Popper also wrote that "My first thesis is thus that our starting-point is common sense, and that our great instrument for progress is criticism."

Criticism effects error-elimination by refuting some of the competing theories. It can take a number of different forms, including not just experimental testing and formal, conscious criticism in science, for example, but argument, experience and many forms of tacit/inexplicit criticism. Young children learning language are unconsciously testing sophisticated inexplicit/tacit theories about language. They are also testing meta-theories – that is to say, theories about theories – which embody knowledge of how to criticise, how to learn and how to form new conjectures.

Rational processes – processes which embody conjectures and refutations – are truth-seeking and open to criticism. These criteria of rationality have profound implications. To be seeking truth means first, seeking solutions to problems, looking for better explanations and better ideas, assuming that there is indeed a solution or a better answer to be found, and that through creative endeavour and considerable effort, it may be found. It means not assuming there is no solution or better idea to be found.

Being open to criticism means that if there is a disagreement in the family, prima facie, there is a problem to solve. That means not discounting someone's genuine disagreement because you think you know best. It means not prejudging the issue, but considering all the available ideas. It means that ideas should be judged by their content, not by their source. For instance, discounting an idea on the grounds that it was put forward by a small child, is inimical to the growth of knowledge, because if the child were right, you'd never find out. Being open to criticism means avoiding dogma and all entrenched ideas, because if an idea is fixed, then by definition, it won't be replaced by any better ideas that do arise.

Another very relevant Popperian idea is that of human **fallibility**: the idea that one may be wrong in anything one says, or to put it another way, the idea that there is no way of knowing for sure that one has not made a mistake in any particular thing one says. A knowledge-creating system is in principle either fallible or infallible. There are no half measures. It cannot be both. Human beings are fallible. That means that they may be mistaken in anything they think. You can't be 'a little bit fallible' any more than you can be 'a little bit pregnant'. You can know more than Bertha; you can have had more experience of life than her; you can have watched more television than her; but you cannot be 'less fallible' than her. It follows that on some occasions when you are absolutely certain in your own mind that she is disastrously mistaken, it will be you who are mistaken, not her. And if, on those occasions, you impose your theory on the child, you will be doing objective harm to the child.

But for the sake of argument, suppose that you have a hotline to an infallible source of knowledge, and suppose that you only ever impose your theories on the child when your infallible source says that you are right and the child wrong.

Being forced to enact even a true theory, against one's will, is psychologically indistinguishable from (and therefore exactly as harmful as) being forced to enact a false theory.

But in reality, because you, like everyone else, are fallible, it is not possible for you to know which of the ideas that you believe to be true are in fact true.

However, it is possible for human beings, through conjecture, reason and criticism, to come to know and understand truths about the world, including truths about the human condition and about specific people. But because we are fallible, it is not possible for us to know which of the ideas that we believe to be true are in fact true. Indeed if you accept that you are fallible, you must hold it to be true that many of the ideas that you believe to be true, including some of those that you believe most strongly to be true, are false.

Why is this important? One reason is that no matter how tenaciously and surely you hold an idea, you could be wrong. Realising this allows you to be more open to competing theories. The way to create new knowledge is to resolve the disagreement by finding a proposal that each person prefers – a common preference.

See also [TCS and Karl Popper](#).

to post comments

## Comments

### **William R. George and The Junior Republics**

*Submitted by a TCS reader (not verified) on 22 December, 2003 - 23:07*

One hundred years ago, advocates of a separate sphere of childhood began to impose their conception of childhood around the world, through compulsory education and child labor laws. The junior republic movement resisted measures that sought to solidify the alienation of childhood from adulthood. William R. George, the founder of the junior republic movement, theorized that denying a child exposure to the economic and political systems of the United States weakens his or her ability to participate in these systems effectively as an adult. "[T]he life of the nation which ought normally to be strengthened, and supported by the training of its youth, is left defective and insecure by the lack of it." (George, *The Adult Minor*, p. 161) In junior republics, kids worked and went to school and were paid for each activity, according to its merits. They made laws through town meetings and enforced them with fines and jail time through courts and juries. They made living and eating arrangements from a variety of choices, according to their incomes and inclinations. The model was the Republic that is the United States. Ironically, the Little Commonwealth in England that was the inspiration for O'Neill's *Summerhill* originated as a Junior Republic (its names changed for obvious reasons),

except that the individual chosen to direct it was someone trained in Republic methodology who had rejected its most important teachings. (The worst problem the junior republics tended to have was hiring administrators who wouldn't interfere and impose their own set of rules.) A dozen or so junior republics sprang up across the United States, with one also in China and another in India. The kids would probably best be described as underprivileged from bad neighborhoods. Some might have had trouble with the law, but only minor trouble. My dissertation, *The struggle to define childhood: Resistance to the private sphere from the junior republic movement, 1894-1936*, Cornell University, looks into what became of the first group of students. Of the 100 of them I was able to trace in the 1920 census, I was able to determine whether this method of child-rearing was economically successful. I found that, among NY males of their age group, an average number were involved in manual labor, while more than twice as many had entered the professions. This is from a group of kids from the Bowery, which certainly wouldn't have provided even an average number in the professions, normally. From this group, one became a New York State Supreme Court Judge and one won a Pulitzer for newspaper publishing. And that's only scraping the

surface of the difference that this kind of an upbringing made. People who are interested in TCS should take the time to find one of William R. George's books -- I particularly recommend *The Junior Republic* and *The Adult Minor* -- which can be found at online used bookstores.

to post comments

### **It seems unnecessary to say**

*Submitted by Geoff (not verified) on 22 November, 2009 - 19:46*

---

It seems unnecessary to say that there are truths about the world (that we may discover but will never know for certain to be true) as though these existed somewhere independent of our minds. Isn't it better just to accept that we are involved in a process of consensual truth creation?

to post comments

---

## More articles

- [Introduction to Taking Children Seriously \(TCS\)](#)
- [Natural Consequences](#)
- [Do the Kids Rule?](#)
- [Is Your Child Worried About Death?](#)
- [Taking Education Seriously](#)
- [Housework Help For a Harried Mother](#)
- [The Education of Karl Popper](#)
- [Help! Child Hates Eyepatch!](#)