

INNOVATION AND CITIZENSHIP

A PROJECT FOR 'GROWTH OF KNOWLEDGE'
IN PRIMARY AND SECONDARY SCHOOLS

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“Innovation and citizenship” is an international school development project under construction investigating the possibilities to learn innovation and citizenship at primary and secondary school levels, possibly in Denmark and Nepal, by applying popperian solutions. Both the advanced late-modern countries of the West and the less developed countries of the Third World seem to be in need of both innovative citizens and an attitude of citizenship. Innovation is needed to meet the intellectual demands of production and by that the material demands of the population. Citizenship is among other things needed to knit together societies under pressure from low participation in the democratic processes, the influence of fundamentalist ideas or severe economical burdens.

The need for innovation and citizenship

The need for innovation has in the developed countries become the mantra and key to the growth of national economies, and as such to the growth and sustainability of the welfare-systems. Put in a very simple way growth of national economies can be expressed as:

$$(1) \quad \Delta Q = \Delta L + \Delta C + TC$$

where Δ counts for a change over a specific time period, Q counts for the total national output, L counts for the labour force used in production of this output, C counts for the used capital and TC counts for Technological Changes (innovation). Growth (ΔQ) then takes place in a combination of growth in the labour force, in investments and in innovation. In today's late modern societies

we see a change away from industrial production (from L and C) towards more knowledge-based, innovative production. Therefore the focus has switched to innovation.

This need for innovation might also be seen among the new industrial nations in their coming fight first of all against pollution and an unhealthy working environment. Secondly innovation will also be in demand in these countries, as they become an integrated part of the international production-sphere of late modernity.



Photo: Farmer with scratch-plough, Jumla, Nepal.

But even under the poorest living conditions in the poorest developing countries innovative skills might be of great help. Often one of the reasons for being poor is lack of simple technical development. An example: As part of increasing the output of farming (needed due to a growing population) one often has to switch from scratch-ploughing to the use of mouldboard ploughs. Developing agencies traditionally have been telling or showing (‘inductive learning’) peasants round the world how to do this. But maybe it will be better – in terms of reaching the best idea and to have the idea to survive also when the development agent has left the area – to have the peasants themselves to develop the plough that fits their fields (‘deductive learning’ – or innovation).

As the competence for innovative thinking seems to become more and more important in the globalized world of today (and tomorrow) there is an urgent need for educators to develop teaching skills that help pupils and students to become innovative. That is the first aim of this project.

Citizenship in this project is understood as the citizens' participation in not only their own lives, but also in the life of the democratic society at large. This does not come by itself. Citizenship has to be trained, and citizens have to be aware that they act with citizenship. Both the training and the awareness seems to be under pressure these days: In the older democracies the populations don't engage so much in party politics, but seems to dislike the mud-throwing parliamentary circus more and more. In the new democracies of Eastern Europe slow economic progress and falling equality among the citizens make people doubt about the qualities of democracy. And in the poor countries of Asia, Africa and Latin-America life itself is such a struggle, that citizenship is not a first priority.

There is in educational systems a need, just as urgent as the need for innovative skills, to find ways to train citizenship and to make the citizens aware of the common, and therefore democratic, responsibility for the society in which they live as well as for the globalized world. This is the second aim of this research project.

The critical rational approach to didactics

In Critical Rationalism the question of learning is answered by making it a parallel to the scientific search for knowledge. In this way schools should not teach the result of scientists' research as 'pure knowledge', but rather arrange for learning processes where the pupils are trained in and use the critical methods of science. To get hold of the scientific, innovational (and as it is: democratic) process, the pupils so to speak have 'to reinvent the spoon'.

The critical rational learning-process, or the growth of knowledge, is described in the well-known Popper-schema:

$$(2) \quad P_1 \rightarrow TS \rightarrow EE \rightarrow P_2$$

Among others Joanna Swann¹ has elaborated the approach to didactics based on this schema. I will therefore not comment more on this, but only state:

This innovative process of 'growth of knowledge' I see as a clear parallel to the democratic process of furthering political ideas, critically having them to clash in elections and parliaments and always give way for new governmental powers due to this process. Seen in this

¹ Swann 1999a, 1999b, and 1999c.

way (2) not only fulfil the aims of the educational system to clear the road to knowledge for its students and to train them in innovative skills. It also educate the students in basic democratic – and to me this equals humanistic – attitudes.

I see at least one question in connection with the use of (2) – the question of learning or acquiring World 3 – “problems, theories, and critical arguments...and...tools, institutions, and works of art”² or “the world of the logical *content* of books, libraries, computer memories, and suchlike”³. Popper claims that: “our conscious objective knowledge (world 2 knowledge) depends upon world 3, that is to say on (at least virtually) *linguistically formulated* theories”. The scientist produces theories in World 3 through (2) and interactions between all three Worlds. Old-fashioned teaching more or less tried to transfer knowledge from World 3 to World 2 – from the brain of the teacher to the brains of the pupils for them (maybe) to use it in contact with World 1.

But how does this work in popperian-inspired learning processes? Two extremes illustrate the ends of a scale:

- A) Naïve popperian learning-theory, where a pupil with his own World 2 wonders about relations in World 1 and initiate the process of (2), resulting in World 3 acquiring. This is the Adam-and-Eve model, where every pupil starts from scratch. But: “if anybody were to start where Adam started, he would not get further than Adam did”⁴.
- B) From a full knowledge of World 3 and experiences in World 1 the pupil wonders about his own World 2 and initiate (2), which give raise to more knowledge in World 3 or conscious knowledge about World 3. This is the scientist’s model, which requires full background knowledge.

In between these two extremes some middle positions can be found:

- C) World 3 induction before P_1 . More or less similar to B). Induction kills the innovational learning from the situation.
- D) Integrating World 3 in the formulations of TS – “trying to find out what other people have thought and said about the problem in hand: why they had to face it: how they formulated it:

² Popper 1974: 149.

³ Popper 1979: 74.

⁴ Popper 1979: 122.

how they tried to solve it”⁵. Maybe the pupils even by themselves can explore World 3 for answers before or along with the formulations of their own theses? Is it necessary for a pupil in grade 5, who wants to put forward a hypothesis or theory on why some objects will sink and others will float, to have *a priori* conscious knowledge of World 3 theories about sinking and floating objects? Or will she as part of putting forward her tentative theory have to study the relevant World 3 knowledge – and in that way return to traditional teaching processes? Take care not to kill the innovational skills in the process!

- E) The use of World 3 to eliminate solutions in EE. Can be disillusioning, as the adults always seem to have the correct answer – so why not just give it to the pupils?
- F) Confront P_2 with World 3. Same result as in E).

Is it only needed to introduce World 3 knowledge, when the pupil asks for it – feel the need for it? And is it so that the hypothesis of the pupil adds to the content of World 3? How actually is World 3 knowledge constituted – as stored facts and theories to be learned by heart, or as frames or schemes or ways of thinking that can guide the formulation of hypotheses (“...learning to understand a problem is a matter of handling third-world structural units”⁶), or both? This question – the meeting point of (2) and World 3 – will have to be dealt with.

To elaborate a little bit more on the democratic implications of (2): Training will be needed, training in being open-minded towards the ideas of others, training in arguing one’s case without fighting the other person, and training in letting ideas “suffer in our stead”⁷. For this to happen among school children I claim that:

- (3) Trust is needed in (2)

Without trust in the classroom the critical approach will not work – openness will not come by, nobody will dare to state a claim frightened to make a fool of him or her self. The process outlined in (2) is in need of a (psychological) context of mutuality between the students and their teacher and between the students themselves.

⁵ Popper 2007: xx.

⁶ Popper 1979: 182.

⁷ Popper 2000: 52.

But also this: Trust in one self, trust in others and, trust in being open about ideas and able still to listen to others voices, is also one of the results of the critical method. Through the training in the critical approach, and by experience or observation in the approach implemented in the classroom, students will develop the attitude of mutual trust. Knowing very well this to be circular statements, I also have to claim that:

(4) Trust is created by (2)

Citizenship; *A sober combination of individualism and altruism*

Pollak argues that an educational theory based on Critical Rationalism needs to go beyond the mere “philosophy of science and its resulting social technology”⁸.

As the autonomous subject in the Kantian understanding, the scientist exercising the critical method of science is seen by Popper as “the prime example for rational learning through trial and error. And science stands for the generalized model for all human learning”⁹, as argued above. But even though, Pollak argues, “humanistic ethics must be given far higher significance in the field of educational theory and educational practice”¹⁰ to make it “possible to justify educational aims within a critico-rational educational theory”¹¹.

Popper himself, I think, gave an answer to this dilemma: On some of the very last pages of *The Open Society and Its Enemies* he discusses the problems of German Idealism and Romanticism. He writes: “Instead of *a sober combination of individualism and altruism* [...] the romantic combination of egoism and collectivism is taken for granted”¹² (Italics by TY). The concepts individualism, altruism, egoism, and collectivism he develops much earlier, in Chapter 6¹³, in a discussion of Plato’s *Republic*. In order to sustain his non-egalitarian ideas Plato argued “that if you cannot sacrifice your interests for the sake of the whole, then you are selfish” – that is: if you are not collective in mind, you are individualistic and therefore egoistic. Popper illustrates Plato’s idea by this schema:

⁸ Pollak 1999: 132.

⁹ Pollak 1999: 131.

¹⁰ Pollak 1999: 132.

¹¹ Pollak 1999: 132.

¹² Popper 1973, vol. 2: 275f.

¹³ Popper 1973, vol. 1: 100.

- (5) *Individualism* is opposed to *Collectivism*
Egoism is opposed to *Altruism*

For Plato individualism equals egoism and collectivism equals altruism. Popper shows that these combinations in one way are correct, but that it is also possible to cross-connect the concepts. In this way the four concepts form a matrix:

	Individualism	Collectivism
Egoism	1	2
Altruism	3	4

Fig. 1. The matrix.

Plato's arguments focused on square 1 and 4: He hoped to convince the Greeks, that the combination of collectivism and altruism, in opposition to the combination of individualism and egoism, would be the moral right place to be. From Plato this dualism went into western thinking where it thrives even today as we talk about the late modernity as the time of extreme individualism and egoism.

At least two points is to be made on the matrix: 1) The matrix consists of concepts dating back to Plato, which means that they are not popperian although Popper used them as shown above. 2) The dualism of the concepts is oversimplifying reality, and maybe they are not even covering the most important aspects of human life.

Anyhow the matrix might also bring some pretty nice illustrations:

In square 1, the combination of individualism and egoism, I place ideas such as economic liberalism and political parties resting on liberalistic ideology. In the opposite square, square 4 (the combination of collectivism and altruism) we find not only the Platonian *Republic* but also modern day socialist ideologies and socialist parties. Square 2 is the square of that Romantic movement Popper argued against in the quotation above. It is also the square of modern day's nationalistic ideologies. And it is the square of the family-based social structures of the Middle East, which acts collectively within the family, but with hostility towards the outside

world. Square 3 then, are the square of Poppers sober combination of individualism and altruism, the square of the social-minded conservatives. This way of understanding the matrix gives rise to at least three remarks:

First of all it is an illustration of the political landscape based on four concepts telling at least something about the content of the political thinking – and far more then the traditional left-right dichotomy, which only relates to parliamentary seating.

Secondly and in line with the political map the matrix also illustrates the differences between *ethnos* and *demos* as concepts in the debate of citizenship. According to Prof. Dr. Ove Korsgaard¹⁴ the *ethnos*-tradition related to Herder, Humboldt and Schleiermacher are focusing on the common language and culture as the kernel of the collective that builds the nation. I see this as collectivism combined with egoism, as it excludes all human beings not belonging to the culture and not talking the language. The *demos*-tradition on the other hand, with its roots in Rousseau and Kant, finds the kernel of citizenship to be grounded in the social contract and the constitution. The *demos*-tradition has the individual being as its base and by being open towards everybody that wants to join the social contract it places itself in the third square of the matrix.

Third the matrix can illustrate (but not explain) the changes from modernity to late modernity in the western societies since the end of World War 2:

	Individualism	Collectivism
Egoism	1	2
Altruism	3	4

Fig. 2. From modernity to late modernity.

The welfare systems that were mainly created during the nineteen fifties and -sixties had their base in the more or less socialist ideas of square 4, the square of collectivism and altruism. During the nineteen eighties and -nineties, when the societies changed from industrial modernity to information-based late modernity, a shift occurred towards square 1, the square of individualism and egoism as told by people like Giddens, Beck, and Baumann. But what is

¹⁴ Korsgaard 2003: 9ff.

seldom told is the story of the counter reaction to this main change: the movement towards the collective egoism – that is the raising nationalism, the fears of foreigners, and the growing islamofobia.

In this story of the last 60 years the ‘sober combination of individualism and altruism’ is left out. [In the spring of 2007 a new political party where created in Denmark based on values very much in line with this sober combination. Very fast the party won the hearts of a lot of Danes – presumably because of the values signaled?] I will, in line with Popper, try to put focus on this combination.

The matrix might be developed further with what I call ‘the circle of tolerance’ or ‘the circle of democracy’: As a parallel to Popper’s demarcation, by the ability of falsification, between science and non-science the circle of tolerance and democracy draw the demarcation between attitudes open to falsification and those not open – between the open and the closed societies.

Politically speaking, in square 4, we find the social democratic parties of modern day Europe inside the circle, as they definitely act within the limits of democracy, and the old-time communist party of the Soviet Union on the outside of the circle. In square 2 we find the modern nationalist parties within the circle and Nazis on the outside. On the outside we also find ‘murder of honour’ within the Middle East family-based cultures. I don’t know if any political movements are to found outside the circle in the squares of individualism¹⁵.

	Individualism	Collectivism
Egoism	1	2
Altruism	3	4

Fig. 3. The matrix and ‘the circle of tolerance and democracy’.

In an educational context the circle of tolerance equals the limits of trust, as I talk about in (3) and (4). Within the circle of tolerance or democracy – or as stated here: trust – the pupils or

¹⁵ Prof. David Turner suggested to me during the Rethinking Popper conference, that Jesus went to the death to atone for the sins of mankind – that must be individual altruism outside the circle of tolerance (as the act is final). Then the two robbers cruxified along with Jesus might represent the individual egoism outside the circle?

students act with openness towards each other when it comes to putting forward and discussing conjectures for solutions of given problems. Outside the circle of tolerance making fun of each other, not listening to others arguments etc. will kill the debate (and therefore in the long run also kill the participants!), kill the acquiring of knowledge – and kill the democracy. Therefore:

(5) Trust is limited by the circle of tolerance

All in all the illustrations of the matrix sums up to this: It is possible to distinguish between two main attitudes – individualism and collectivism, and to add two secondary ideas to each of them: egoism and altruism. By doing so, one gets a new map of the political landscape, the landscape of the debates of citizenship and the landscape of sociological analysis of late modernity – and by that also a new map by which to navigate these landscapes and still be within the circle of tolerance and democracy. In this way we might rethink citizenship education as an up-dated, pedagogical use of Poppers fight against the totalitarian regimes of last century.

Testing the theory

The framework of the project is outlined as this:

- A thoroughly description of Critical Rationalism, including a didactical operationalization, is needed to establish a (scientific) base for the project.
- Based on the learning principles of Critical Rationalism a general teaching/learning hypothesis has to be formulated.
- This hypothesis has to be tested in schools both in Denmark and abroad in order to falsify or corroborate it.

Both tentative theories will be operationalized, which means that they will be made practical accessible for practitioners – teachers in primary and secondary schools. This will be done in cooperation with the practitioners (and pedagogical researchers when it comes to Nepal) through analyses and advises connected to national curricula (Fælles Mål in Denmark for example).

The operationalized statements will in due course be transformed into hypotheses about the outcome of learning situations based on critical rational principles. To test the theory an implementation program will hopefully take place in Denmark and Nepal.

Denmark is chosen as a western democracy with an economy fully part of the globalized late modernity.

Nepal represents the poorest countries of the world, struggling with low educational levels and agricultural technologies insufficient to feed its own population. Critical rational didactics is seen as having a potential in helping to solve these problems.

Tests will be subject to a prohibitive hypothesis saying that implementing critical rational didactics will show that no situations exist, where students are not able to react with trust and fundamental democratic behaviour in a critical analysing way to problems they face at least at the same level as students from a compare group.

Tests will be both quantitative (assessment scores) and qualitative (interviews, observation).

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