This set of notes in PDF format derives from the video/vimeo presentation entitled:

"The Symposium on Vygotsky's Concepts: Part One"

Towsey, Kellogg, & Cole

July 2010

The video/vimeo presentation is available for viewing at the CHAT/Mind Culture Activity website:

http://vimeo.com/groups/39473/videos

Please note that the renditions of the slides (thumbnails) which appear at the top of each page in this PDF are reduced in size and subsequently contain proportionately smaller text (in some cases too small to read). The function of these thumbnails is for them to act as place markers when referring back and forth between the video/vimeo and these notes pages: the intention of making these notes pages available is to provide a transcript of each of the speaker's arguments from the presentation itself, to facilitate ease of referencing. Should you wish to read the text contained in the thumbnails of the slides, please view the video/vimeo presentation.
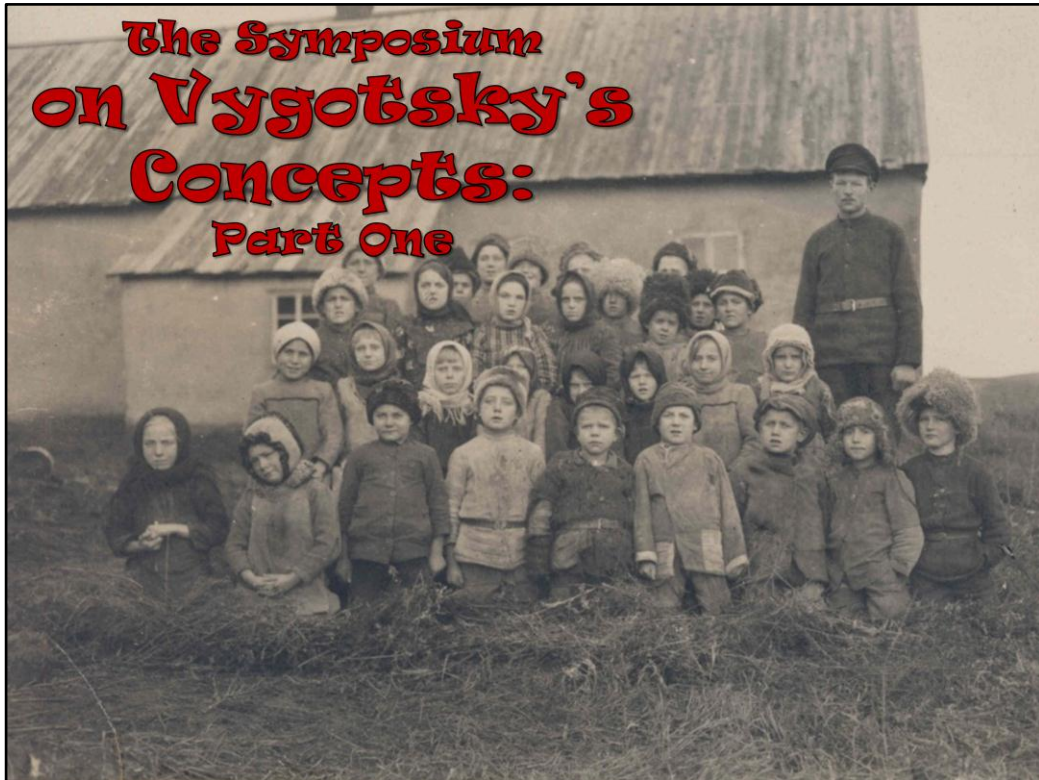
Welcome to Part 1 of a symposium featuring the theory of LS Vygotsky on the subject of concept formation. I am Paula Towsey, and it is my great pleasure to introduce my fellow symposiats and their presentations.

But before we begin, some comments upfront about the presentation format…

Several
Upfront
Comments

The presentations in this symposium comprise Part One of a collaborative presentation in a media format along the lines first envisaged by Andy Blunden.

The presentations are text rich: this means that blocks of text appear at the same time that the presenters are talking.

These blocks of text and the graphics on each slide are supportive to the main element of the presentations, which is what the speakers are saying. What appears on the screen and what the presenters are saying do always not flow like reading a book.

Our suggestion is that you suppress your natural instinct to read everything on the page, and instead relax into listening to the speakers and taking in the text and the graphics as secondary to the main event.

Several More Upfront Comments

The presentations in this symposium are also available in "Notes Pages" format.

These Notes Pages include transcripts of the speakers' arguments, and a List of References.

The Notes Pages are numbered to facilitate any citations you may wish to make. For example, "Cole (2010)", for in-text references, and "Cole, M, (2010), 'Do College Professors Think Like Children, Primitives, or Adolescents?', in The Symposium on Vygotsky's Concepts: Part One, (Notes Pages from the video/vimeo), Slide #4" in a List of References.

If you are viewing this presentation via a program such as VLC media player, the hotkey for play/pause is the spacebar, and Ctrl + the left and right arrow keys will jump you one minute forward or back.

In 2007 I conducted a cross-sectional study into concept formation processes with the Sakharov-Vygotsky Blocks procedure. I am currently a PhD candidate at Leiden University in the Netherlands. My presentation, the first in this symposium, explores the nature of the connections between things. It also explores the connections – or lack of them – which seem to exist between Chapters 5 and 6, and offers a new piece of evidence from Vygotsky himself about this very issue.

The next presentation, from Professor David Kellogg of Seoul National University of Education, South Korea, offers a thought provoking examination of the historical circumstances in which the development of Vygotsky's work on concept formation took place. David presents a compelling philosophical analysis of the categories we find in Chapters 5 and 6, and an incisive account of the events and influences which acted upon the direction of this important aspect of Vygotskian theory. And the next presenter is Professor Mike Cole, of the University of California San Diego and the Laboratory for Comparative Human Cognition. From among the many issues which arise from the discussion by Vygotsky in Chapters 5 and 6, and by Luria in the Afterword to Volume One of Vygotsky's Collected Works, Mike has chosen to focus on the sources of ontogenetic and cultural changes in concept formation. Mike's deeply thoughtful discussion provides insight into core issues of human cultural-cognitive activity and development. In putting forward for consideration a perspective which has the potential to unify the apparently disparate theoretical elements of these chapters, Mike directs our attention to future areas of research and collaboration.

In Connection with Chapter 5 of "Thinking and Speech"

By

Paula M Towsey

PhD Candidate

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**Chapter 5**

**AN EXPERIMENTAL STUDY OF CONCEPT DEVELOPMENT**

1

Until recently, a major impediment to the study of concepts has been a lack of experimental methods that would allow the investigation of their formation and their psychological nature.

Traditional methods for studying concepts fall into two basic groups. The first is typified by what is called the method of definition. This method involves the study of fully developed and fully formed concepts through the use of verbal definitions. Despite its wide acceptance, this method suffers from two fundamental inadequacies that make it unreliable for any realistic investigation of concept formation.

My presentation is about Chapter 5. It is here that we are introduced to the "Vygotsky-Sakharov Blocks" activity, the method of double stimulation for the experimental study of concept formation.
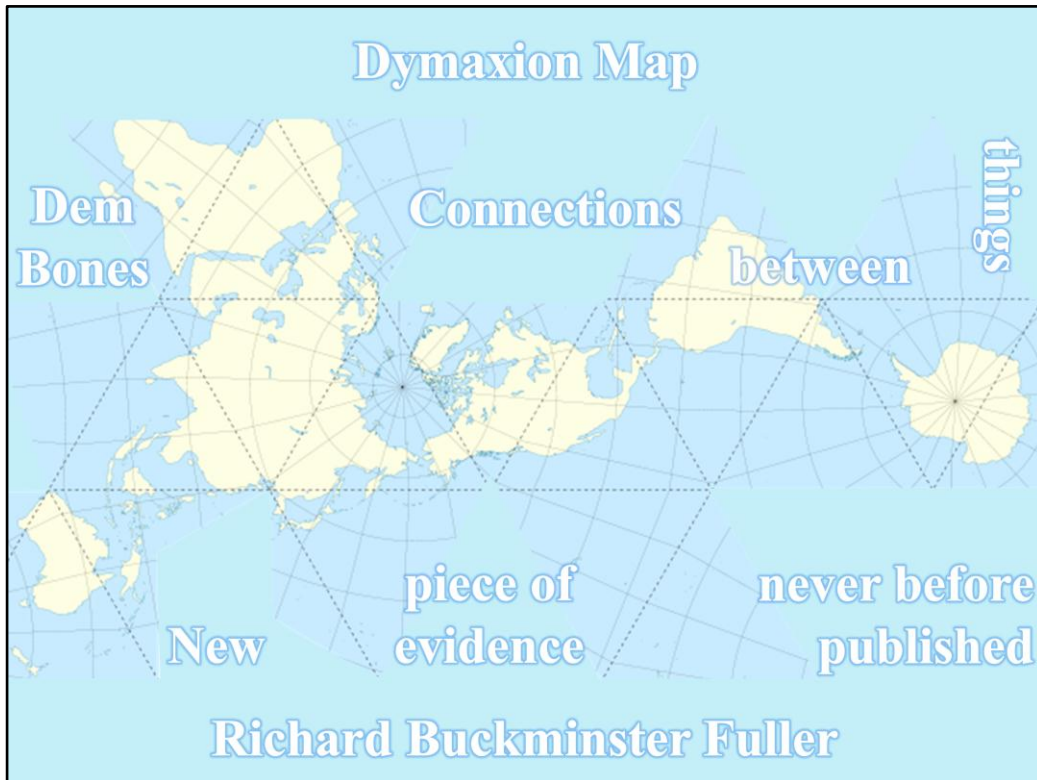
The thread that I have chosen to follow in this presentation – as the song [Dem Bones] and the Dymaxion Map suggest – concerns the nature of the connections between things in concept formation processes. What I have also chosen in particular to share with you is a new piece of evidence that suggests an intriguing connection between Chapters 5 and 6.
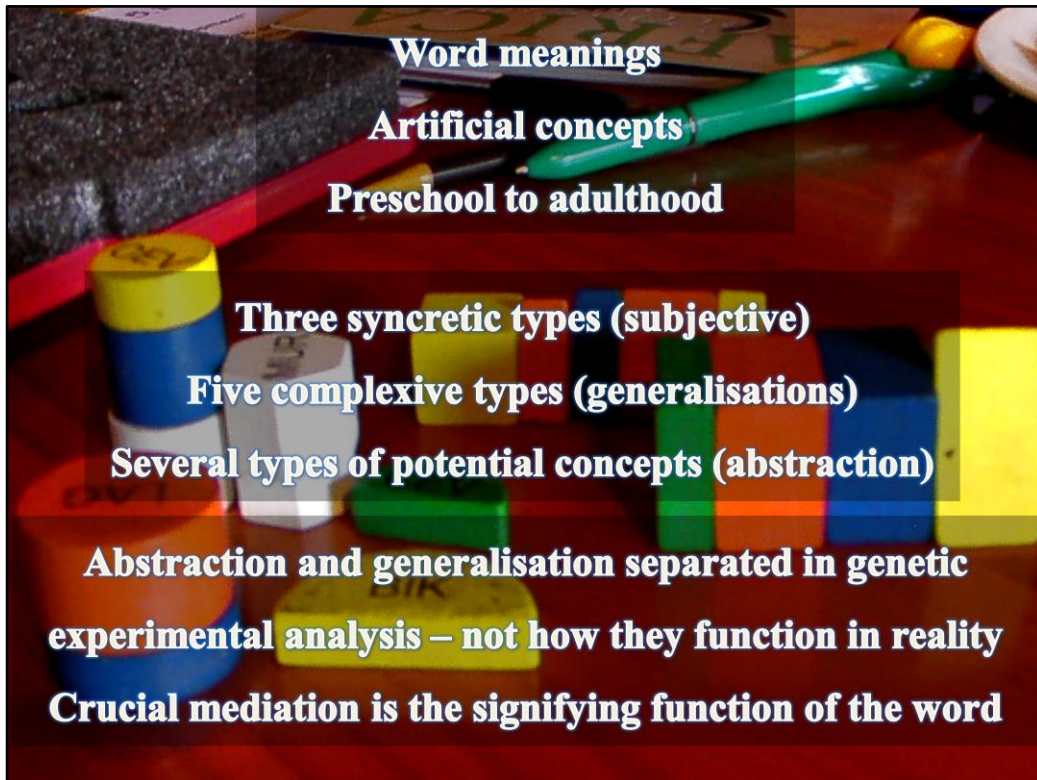
In following this thread, I established that developing word meanings are the focus of the study. The experimental method developed for this study of artificial concepts by Vygotsky and Sakharov and their colleagues overcame many of the shortcomings of other methods in use at the time, including a vast and crucial improvement over the instrument developed earlier by Ach, upon which the blocks method handed down to us today was based. Vygotsky's intention was to investigate the development of the processes and intellectual functions which eventually lead to the formation of true conceptual representations in a range of subjects from early childhood to adulthood. And so, after the astonishing detail of Chapter 5's descriptions of syncretic and complexive representations, and the potential concept, I couldn't wait to find out how these linked in with the scientific and everyday concepts and the ZPD of Chapter 6. But they appeared, curiously, to be missing...

> The most that the artificial experiment can provide is a general genetic scheme of the basic stages of concept development. The analysis of the child's actual concepts made it possible for us to study little known characteristics of syncretic concepts, complexes, and preconcepts; it made it possible to establish that in each of these spheres of thinking there is a different relationship between the concept and the object. The object is also grasped by a different act of thought. Thus, the two basic features that characterize the concept manifest their differences in the transition from one stage to
>
> ### 6. Development of Scientific Concepts                                      229
>
> the next. This implies that the nature of these concepts and all their characteristics differ. A different relationship to the object implies differences in the connections and relationships that are possible among the objects in thought. A different act of grasping the object in thought implies different connections among thoughts, that is, different kinds of mental operations. In each of these spheres, we find characteristics that are a function of the nature of the concept: (1) there is a different relationship to the object and to the meaning of the word; (2) there are different relationships of generality; and (3) there is a different set of possible operations.
>
> However, this investigation of the child's actual concepts represents more than a bridge between the study of experimental and actual word meaning, more than a way of identifying new characteristics of concepts. This research has filled a fundamental gap in previous research. As a consequence, it allowed us to reevaluate the theoretical significance of that research.
>
> In our earlier research, the relationship of the word to the object was analysed anew with each stage in concept development (i.e., with the stages characterized by syncretic concepts, complexes, and true concepts). We ignored the fact that *each new stage in the development of generalization depends on the generalizations found in the preceding stages.* A new stage of generalization arises on the founda-

I had, of course, been forewarned by Kozulin (1990) concerning Vygotsky's awareness of the limitations of the Blocks study. And Kozulin seems, I think, to link the study by Shif into children's actual concepts more purposively as the next step in the progression of Vygotsky's programme of investigation than is perhaps clear in Vygotsky's own criticism of the earlier research into artificial concepts (Vygotsky, 1987, pp. 228-229).

Satellite Dymaxion Map

The Bathwater — Longitude — Measure of Generality

The Baby Latitude — Structures of Generality

After Richard Buckminster Fuller
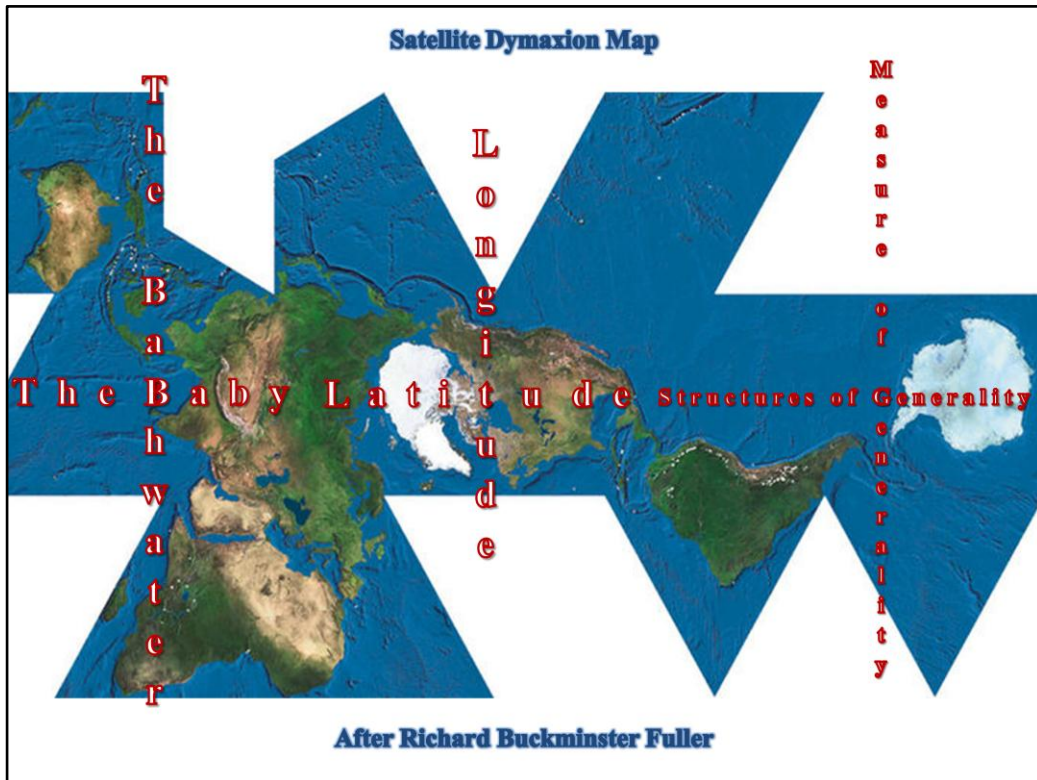
In trying to navigate my way around the longitude and latitude of Chapter 6 point 6, I failed to recognise Vygotsky's insistence on the structures of generalisation and the nature of the connections which these make possible. So I consulted the *Introduction* to the current volume and found to my dismay that Chapter 5 is referred to more frequently than any other chapter – and that none of it is flattering.

234                                                     Thinking and Speech

We know, however, that to each structure of generalization there corresponds a specific system of relationships of generality. This is because generalizations of a given structure must exist in a given system of relationships of generality. Consequently, to each structure of generalization, there corresponds a specific system of logical operations of thinking that are possible for that structure. This is among the most important laws of the psychology of concepts. It indicates the unity of the structure and function of thinking, the unity of the concept and the operations which are possible for it.

**7**

We can now attempt to clarify the differences between scientific and everyday concepts in the light of our findings. <u>The key difference in the psychological nature of these two kinds of concepts is a function of the presence or absence of a system.</u> Concepts stand in a different relationship to the object when they exist outside a system than when they enter one. The relationship of the word "flower" to the

But then I read the introductory sentences to Chapter 6 point 7: aha! The presence or absence of a system. Yes, there is a system in the process of school instruction – Vygotsky's examples of these are the social sciences and algebra, and there is a system in the processes of instruction in forms of societal knowledge of particular disciplines. And, crucially, there isn't a system in complexive thinking. And what is important about the study of artificial concepts, after all, is that it reveals to us what children's thinking looks like without the (systematic) directing influence of the adults around them.

> ## Recently translated documents from the Vygotsky family archive  (E. IU. Zavershneva, in press) reveal that in mid-1932 Vygotsky wrote:
>
> 7.  How we <u>unconsciously, spontaneously received</u> from Sakharov what was in the Adolescent.[25]  He died without suspecting this.  We cannot proceed this way, but <u>the problem of meanings</u> and <u>systems was imposed on us</u> by this inquiry <…>
>
> 17.  Our def[i]c[ie]ncy is not a def[i]c[ie]ncy of facts, but the untenability of the theory: in the analysis of our crisis this is the main difficulty, but not a departure from facts.  This is *contra* A[.]N.  Consequently: salvation is not in the facts but in the theory.  We introduced the syst[emic] pt. of view too late.  Cf. pictogram, memory in A[.]N., Morozova's experiments.  Now I understand all this more deeply.

The new piece of evidence, however, unsettled me once again.  It seems to confirm those general opinions that Chapter 5 represents little more than a curious and outdated anomaly.

But then I found out that there is a more accurate translation of that first sentence which radically alters the entire meaning...

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### Recently translated documents from the Vygotsky family archive (E. IU. Zavershneva, in press) reveal that in mid-1932 Vygotsky wrote:

7.  How we <u>unconsciously, spontaneously received</u> from Sakharov what was in the Adolescent.[25]*…

    [Whereas, the more accurate translation of this sentence is:]

7.  We <u>involuntarily, spontaneously</u> found the same in The Adolescent as Sakharov did [in his earlier paper].[25]*…

    He died without suspecting this. We cannot proceed this way, but <u>the problem of meanings</u> and <u>systems</u> <u>was</u> <u>imposed</u> <u>on</u> <u>us</u> by this inquiry <…>

17. Our def[i]c[ie]ncy is not a def[i]c[ie]ncy of facts, but the untenability of the theory: in the analysis of our crisis this is the main difficulty, but not a departure from facts. This is *contra* A[.]N. Consequently: salvation is not in the facts but in the theory. *We introduced the syst[emic] pt. of view too late.* [My italics.] Cf. pictogram, memory in A[.]N., Morozova's experiments. Now I understand all this more deeply.

* Translated by Van der Veer, pers. comm. 30-03-2010

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What this new evidence seems now to be saying is this:

"Quite independently, our findings in The Adolescent found correspondence with Sakharov's earlier work. He died without suspecting this. But we cannot go on this way – with The Adolescent[Chapter 5] alone: it does not and cannot stand up as it is. Its strength is on the development of word meanings and in pointing to the need for a systemic point of view. Our deficiency is in the theory and I don't think, as A.N. does, that we require a departure from the facts to remedy it. We introduced the systemic point of view too late – in adolescence, when it is also there, all along to be found earlier, in the process of instruction..."

And so what I think that this new evidence suggests that the two studies of artificial and scientific/everyday concepts complement one another – the strengths and weaknesses of the Blocks study pointed in the direction that Vygotsky's theory needed to travel: in the good company of developing word meanings, along with a systemic viewpoint –from the social sciences, from algebra, from almost any process of intentional instruction from a particular discipline –  because these create "zones of possibility" which engender the emergence of truly conceptual thought.

These new notes link Vygotsky's carefully worded *Preface* to the current volume as to why Chapter 5 is still there, in print, nestled between the roots of thinking and speech, and the instruction which leads development.

What do you think?

What I think is that Chapter 5 is an abstract, logical view of concept formation more or less derived from Hegel's *Logic* and confirmed, or at least lavishly illustrated, by Sakharov and Vygotsky , and then by Paula Towsey (Towsey and Macdonald 2009).

I think that Chapter 6, with its actual classroom observations, is both linked to and distinct from this work. However, as Paula's new evidence suggests, I think in the end it is rather more linked than distinct. In order to see this deeper link, and to understand why it is somewhat hidden, it helps to look closely at the history of *Thinking and Speech* itself, as Paula has helped us to do.

### Linked, but Distinct, but Still Linked

David Kellogg
Professor
Seoul National University of Education

Linked, but Distinct, but Still Linked

David Kellogg

Seoul National University of Education

What I think is that Chapter 5 is an abstract, logical view of concept formation more or less derived from Hegel's *Logic* and confirmed, or at least lavishly illustrated, by Sakharov and Vygotsky (and then by Paula). I think that, as Paula makes clear, Chapter 6 is both linked to and distinct from this work, yet in the end it is rather more linked than distinct. In order to see this deeper link, and to understand why it is somewhat hidden, it helps to look closely at the history of *Thinking and Speech* itself, as Paula has helped us to do.

> **Chapter FIVE:** A "strange situation" in which experimental concepts are reverse-engineered. The microgenetic process is observed and interpreted with the correct outcome firmly in hand.
>
> **Chapter SIX:** A new concept-based social science curriculum in which largely unconnected academic concepts like "exploitation" and "revolution" are learnt largely by "empty verbalism". The ontogenetic process is observed and interpreted with the (largely hypothetical) results firmly in mind.
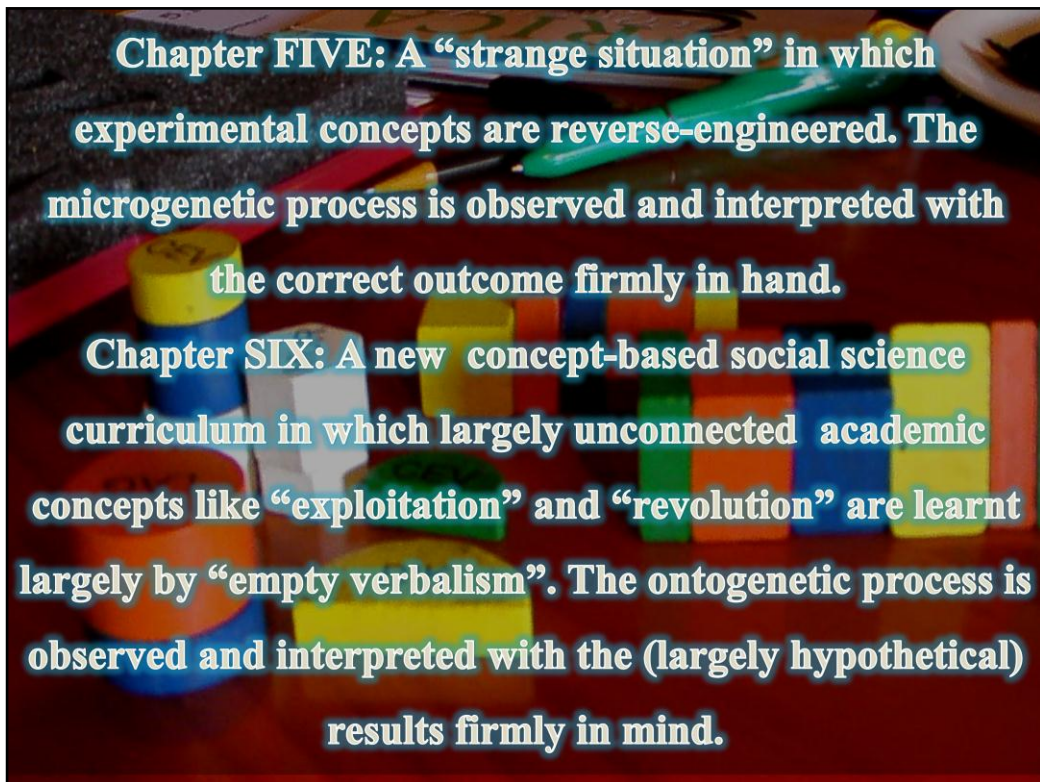
As Paula points out, the superficial links between the chapters are not very flattering. Today, the methodology of both chapters seems circular, the procedure self-fulfilling, and the conclusions overdetermined and in the case of Chapter 6 largely hypothetical. Our current bent is much more in the tradition which at the time was represented by the snail-gathering child psychologist Piaget. It is towards collecting facts and hoping that conclusions will somehow spontaneously emerge, or towards rich ethnography and "thick description", or at the very most "grounded theory". Peter Langford, for example, has called Vygotsky little better than an academic fraud, and even sympathetic writers like David Bakhurst admit that we would not really call these experiments today. What these chapters are BOTH doing is something more like well-theorized grounding, or speculate-and-confirm.

Yet I want to argue that this approach makes sense for a brilliant young group of scientists who have nothing to lose but their lives and a whole world, a whole new psychology to win. Perhaps, if I had a few more slides to fill, I might even argue that the main difference between people like Sakharov, and Vygotsky on the one hand and people like us on the other is that they were perhaps a little more aware of and a lot more honest about what they were doing than we are today.

**The Blocks – as per Vygotsky, 1931, Pedology of the Adolescent, (Russian version p. 240).**
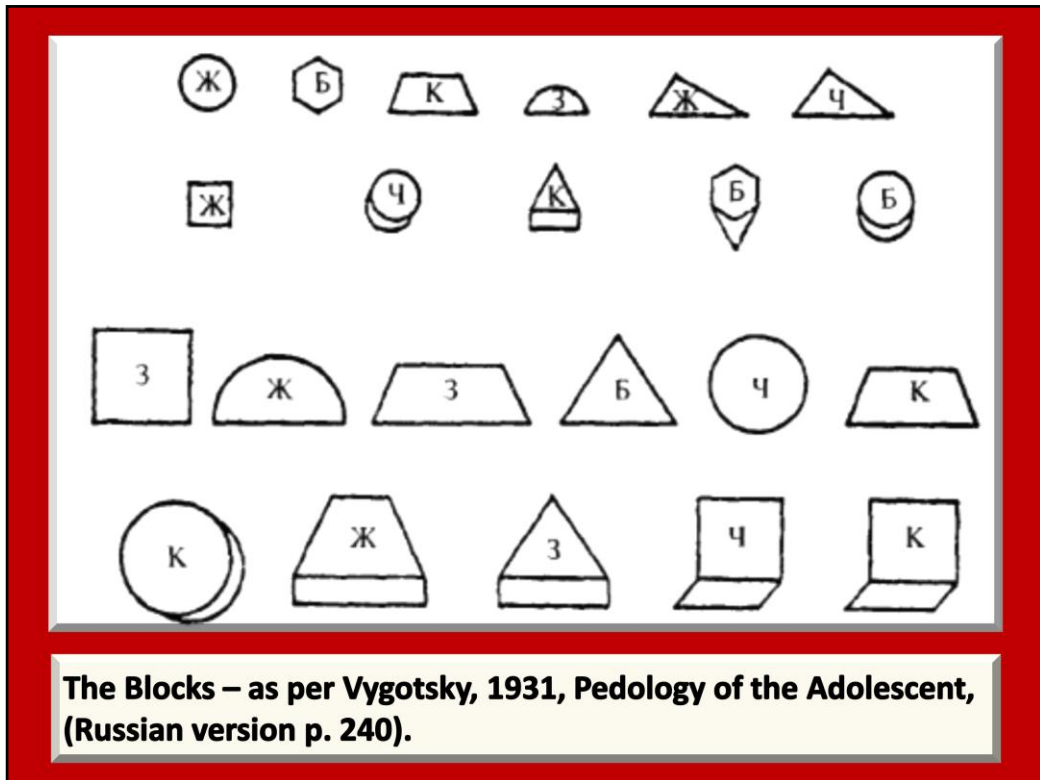
My father, who studies solar physics, was a great admirer of Soviet science, and worked there in the 1960s. He complained, however, that his Soviet colleagues did not really do experiments; they did a lot of brainwork, and then they demonstrated the brainwork with paper, pencils and a slide rule. Experiments were costly and time consuming, and nobody liked surprises. Scientists really wanted to know where to look before they started doing any looking.

## Concept formation in Hegel's *Logic*

**Being**
- Quality, that is, color and shape. In this case, green, orange, white, yellow and triangle, circle, half circle, hexagon, trapezoid.
- Quantity, that is, number and group. In this case, four groups of five or four blocks.
- Measure, that is, height and diameter. In this case, tall or short, big or small.

**Essence**
- Ground, that is, the contrast between a figure and a background. In this case, the contrast between the blocks and the board, and the contrast between one block and other blocks.
- Appearance, that is, the contrast between various features in a single block. In this case, the contrast between color and shape, or shape and height, or height and diameter.
- Actuality, that is, the contrast between each unique block and all of the others.

**Concept**
- Subject, that is, the "I", the ego, the being, in this case the child.
- Object, that is, the "it", the alter, the thing, in this case, the block.
- Idea, that is, the idea the idea of a being in the thing, in this case, it's the idea that exists first for others and then for me, in the measurable qualities of various quantities of block (size and diameter): an "it" is a kind of "we" and then a kind of "I"!

Here is what I think Sakharov and Vygotsky were looking for: three moments in the emergence of the "notion" or "concept" in Hegel's *Logic.* You can see that the first moment is concerned with the quality, quantity and measure of things. The second stage involves their perception, first as figure against ground, then as a bundle of features, and finally as a unique exemplar. But it is the third moment that forms the basis of the way that Sakharov and Vygotsky sort their data in Chapter 5.

The Symposium on Vygotsky's Concepts: Part One
Towsey, P., Kellogg, D., & Cole, M., 2010

Heaps, or Jumbles (purely subjective groupings)
The random heap (blocks are simply put together by the subject for no objective reason, the stage of 'this' and 'that')
The spatial heap (blocks are put together by the subject because they happen together, the stage of 'here' and 'there'
The two-step heap (blocks are put together by the subject into random or spatial heaps, and then a block is selected
from each heap and put into a new jumble)

Complexes (objective, that is, concrete, perceptual, factual groupings)
The associative complex (blocks are put in a group which is based on association with a prototypical "model", e.g. a
triangle with a triangle, or red with red, or tall with tall)
The complex-collection (blocks are put together in groups were every member is different in some way, e.g. triangle
with trapezoid with circle with semicircle, or blue with red with black with green)
The chain complex (one block leads to another, e.g. a blue triangle leads to a red triangle leads to a red square leads
to a green square)
The diffuse complex (one trait is selected, e.g. color or shape, however this trait is allowed to vary in an unbounded
way, e.g. yellow to green to blue, or triangle to trapezoid to square)
The pseudoconcept, or bounded complex (the trait selected is defined in a way that seems externally similar to an
abstract concept, e.g. color or shape, but is in fact based on factual resemblance rather than an abstract under-
standing of the quality, e.g. "this looks kind of like that")

Concepts
Everyday concepts (these are used syntagmatically and not as part of a paradigmatic hierarchy of generality, e.g a tri
angle is considered unrelated to a circle)
Scientific concepts (these are used in school and as part of a paradigmatic hierarchy of generality, e.g. a circle can be
considered, like a triangle, to be a type of polygon with infinitely many sides that are infinitely small)

Here is what Sakharov and Vygotsky found in their data. And if you look at the table of categories in Hegel's Logic you can probably see why they found it. The first moment of "heaps" or "jumbles" corresponds to the subject, the second moment of complexes corresponds to the object, and the third corresponds to the emergence of the "idea". So Vygotsky records (on p. 79 of the Minick translation of *Thinking and Speech*) that one of Ach's subjects referred to Ach's experiments as "experimental philosophy". Vygotsky's approval of this view is evident, not just in this passage, but in the new piece of evidence that Paula has put before us and in the whole of Chapters 5 and 6.

T: In spring, flowers and...? (flying gesture)

S3: Bee.

T: Bee? Oh, yeah. Bees. We see bees.

S4: Butterfly.

T: Butterflies. And ...Yerim?

S5: Dragonfly. (sic)

T: Uh? Yes. Dragonfly? (sic) Do we see dragonflies? No...

T: In what season do you see dragonflies?

S6: 어... 가을 (autumn).

T: Dragonflies 언제 나타나요? (When do we see 'dragonflies'?)

S1: Fall.

Yet this apparently speculative approach really does help us to understand classroom data today. In this short conversation between a group of Korean sixth graders and their teacher, we can see something like what Vygotsky and Sakharov, and then Vygotsky and Shif must have seen. The teacher begins with an academic concept, namely the English word "spring". "Spring" leads "flowers" and "flowers" lead to "bee'". Note the Korean use of the bare singular to indicate the "bee" concept, unlike academic English which uses the plural to indicate a general class of objects. Bees lead to butterflies, and in a chain complex, to dragonflies. But here S1 and the teacher together call a halt: the boundaries of the concept have been reached, because dragonflies in Korea do not appear until the fall typhoon season. This conclusion too was foretold in the very first two words of the exchange; this too is a demonstration, and an example of empirical philosophy. But this is a real classroom.

> KT: Right. Continents means 대륙 (continent). So how many continents do we have on the Earth?
> S4: Six?
> Ss: Seven.
> KT: We have seven continents on the Earth.
> FT: Can you say the names of the seven continents?
> S2: Asia.
> KT: Asia!
> S5: Europe.
> KT: Yeah, Europe.
> S4: North America.
> KT: Yes, and?
> S6: South America.
> S7: 쌌다메리카?
> (Ss burst into laughter)
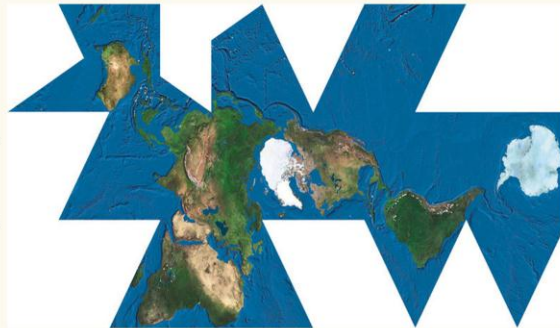
Here the teacher tries to relabel the Korean concept "daeryuk" ("landmass") with the English word "continent". The children cannot decide if she is talking about a geopolitical entity (in which case Asia and Europe are separate) or a geotectonic one (in which case, as Paula's map shows, they are a single landmass). The children eventually channel their attention to the word as a meaningless sound by giving "South America" an exaggeratedly Korean pronunciation which vaguely suggests shitting. The continents are not being taught as either a geopolitical or a geotectonic system. They are, like many adult words, a hodgepodge of mutually inconsistent criteria, and we cannot even agree on how many there are, and whether, for example, Australia is one, or if "Oceania" counts, even though it is mostly water. In this they are more like the complexes in Chapter 5 than the system of meridians and parallels in Chapter 6.

Fuller's map gives us an "accurate" sense of the proportional size of landmasses (if for some reason other than a false sense of "objectivity" we should we require that). But at the same time it denies us the system of meridians and parallels we require to get from one land mass to another. Vygotsky's view, expressed in the note which Paula has uncovered, is that science too is like this, and the objectivity of a theory is in the set of human practices that it enables and not in some imagined fuller projection of the way the world is. Marxism, of course, was his paradigm for this.

For most of the 1920s, Vygotsky and his colleagues in the Ministry of Education considered themselves "pedologists", that is, researchers who studied the whole child, and studied the child for his or her own sake rather than as a way of understanding education, or psychology, or philosophy.

The pedologists advocated a curriculum that was based on "complexes". It appears to have been a kind of theme-based or content-based instruction: the children learned all about objects that were associated with particular forms of activities, especially play or work.

In 1929, the pedologists, along with Lenin's widow, Nadezhda Krupskaya, came under attack by the new regime led by Stalin. The new leadership was collectivizing agriculture and pushing for rapid industrialization, and they wanted a highly accelerated education system based on science concepts that would allow them to catch up with and even surpass the West. They believed that the old curriculum based on complexes was too easy. A decree put an end to the "labor school" that had been set up by Vygotsky's colleague Blonsky. Vygotsky, who was editor in chief of the main journal of the pedologists, began to be heavily criticized. Sakharov himself committed suicide.

Heartbroken, Vygotsky took three steps back. First, he renounced the teaching of complexes. Then he explicitly criticized the pedologists (including, of course, himself). And finally he began to argue that teaching has to orient to the future of development and not to the child's past. Here he began to formulate for the first time a link between microgenesis and ontogenesis, not simply a limit to the kind of curriculum that children can learn at any given moment of development.

"As is well known, for a time there was the domination amongst us of a system of school teaching in complexes, and that pedagogical arguments were furnished in support of this system. It was said that this system of complexes corresponded to the characteristics of child thinking. The fundamental error lay in the fact that the way in which the problem was posed was wrong in principle. It derived from the idea that teaching had to base itself on the characteristics of development of child thinking. The pedologists prescribed their consolidation, through the system of complexes, the development of what the child should have abandoned at the entrance of school. This oriented to what the child could do thinking on his own, and ignored the possibility of a transition from what he knew to what he did not know how to do. It evaluated the state of development like a stupid gardener: only on the basis of mature fruit. It did not consider that teaching could push development forward. It did not consider the area of proximal development. (6.4)"

But these three steps back allowed him to take three giant steps forward. His first step was to distinguish, as the Gestalt psychologists were then doing and as the reflexologists had refused to do, between learning and development.
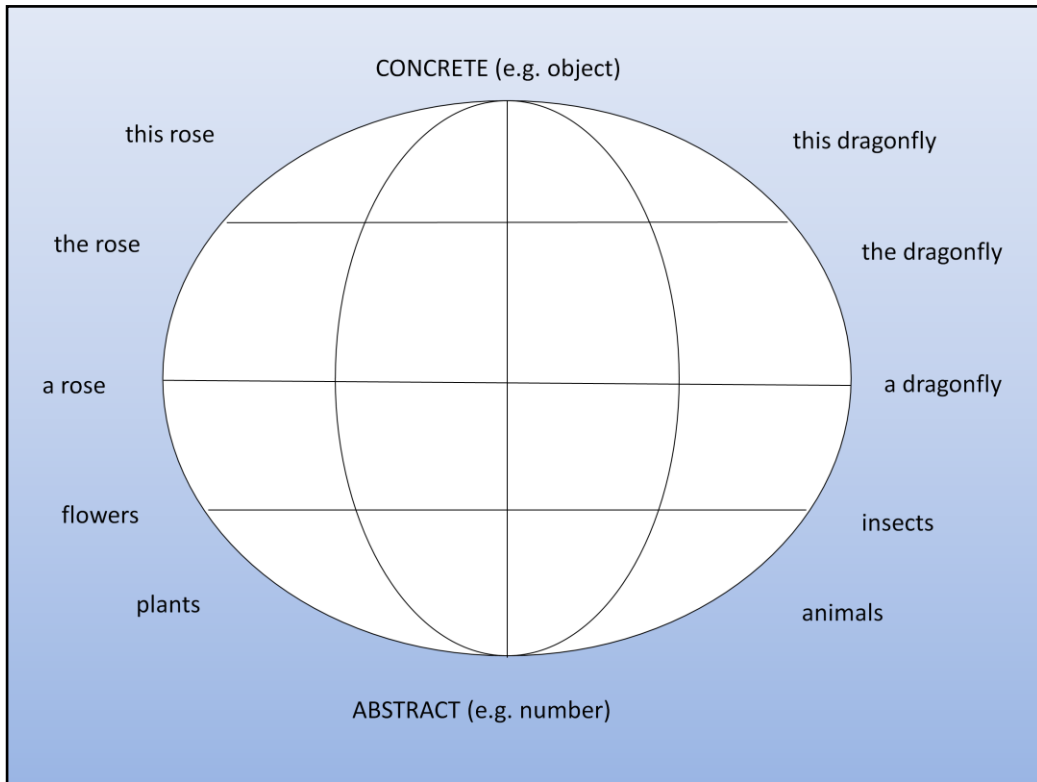
His next step was to replace the bewildering array of heaps, complexes, pseudoconcepts, and potential concepts with the idea of a measure of generality. New relations of generality were not built anew with each step forward in development; instead, the old relations of generality were to be included in the new system, but reorganized.

He imagined the "measure of generality" as a kind of globe, where one pole was represented by object related meaning (e.g. ostension, indication, naming unique objects) and the other by pure abstraction (e.g. number as a relation between quantities and not just as a quantity of actual objects). As Paula remarks that Vygotsky remarks, the structure of generality specific to the child will not always coincide with the measure, the relations of generality of the child's life activities. On the contrary, there's going to be a lack of fit, and quite a bit of tugging this way and that, every time the child does schoolwork and even when the child plays with older siblings.

"We have succeeded in establishing that generality (differences in generality) does  not coincide with the structure of generalization at the different stages that we determined in experimental study on the formation of concepts: syncretism, complexes, preconcepts and concepts.  (6.6)"

Vygotsky's third step was to differentiate academic, scientific and foreign language concepts on the one hand and the everyday concepts of the native language on the other, placing academic concepts well to the SOUTH of everyday concepts on his "globe of generality", and studying how these two very different types of concept interact. This allowed him to focus on the issue of conscious awareness and systematization of what the child knows, the volitional access that transforms a concept for others (what he had previously, following Koffka, called a "pseudoconcept") into a concept for myself. The child unaided can now set the limits to complexive diffusion, as S1 did in our example; the child can tell us that dragonflies do not form a part of the foreign language concept of spring and that Europe and Asia are geotectonically linked but culturally distinct.

So we see that Chapter 6 really is linked to Chapter 5, although it is distinct as well. Vygotsky does in fact refer to the forms of thinking he and Sakharov uncovered. But what he says is that Chapter 5 uncovered STRUCTURES, that is, FORMS of thinking (specifically, word meanings or rather modes of word meaning in the mind of the child). These forms of thinking do not coincide with the functions of thinking, with the child's ability to do things mentally. That lack of fit is what causes development.

Now, we tend to think of this lack of fit as a lack—the child lacks what it takes to deal with schoolwork, for example, just as once the child lacked what it took to deal with adult communication. Yet it seems to me that there is another way to look at it; the child is functionally super-productive, largely because the child does not ever function alone. That surplus of productivity is what overwhelms the structure of generalization, and that overwhelming overthrow of all that had once seemed as solid as a toy block is what drives the child's development relentlessly forward.

But what do you think?

Vygotsky's Chapters 5 & 6: Do College Professors Think Like Children, Primitives, or Adolescents?

Mike Cole

July 2010
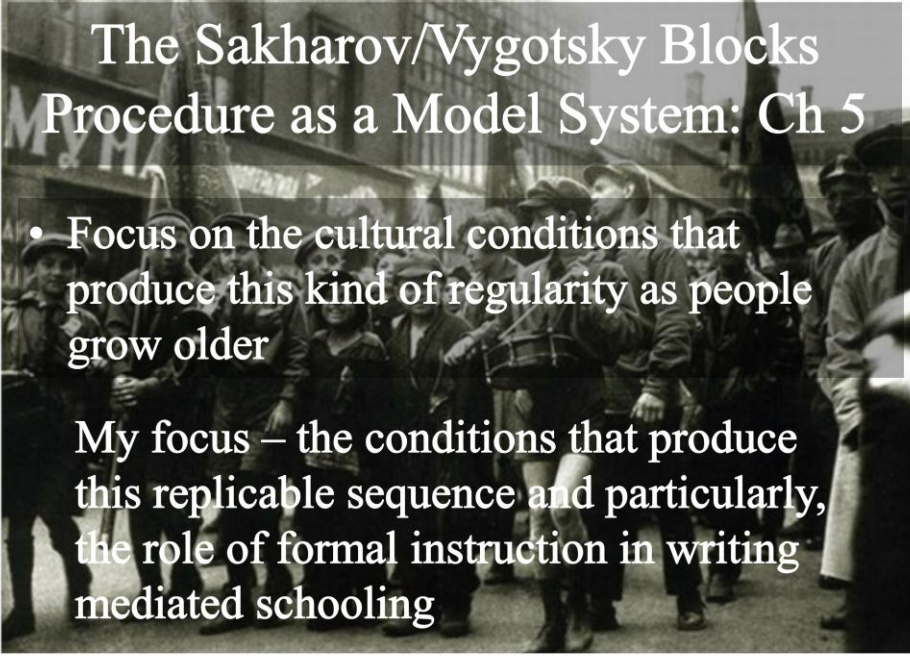
The Sakharov/Vygotsky Blocks Procedure as a Model System: Ch 5
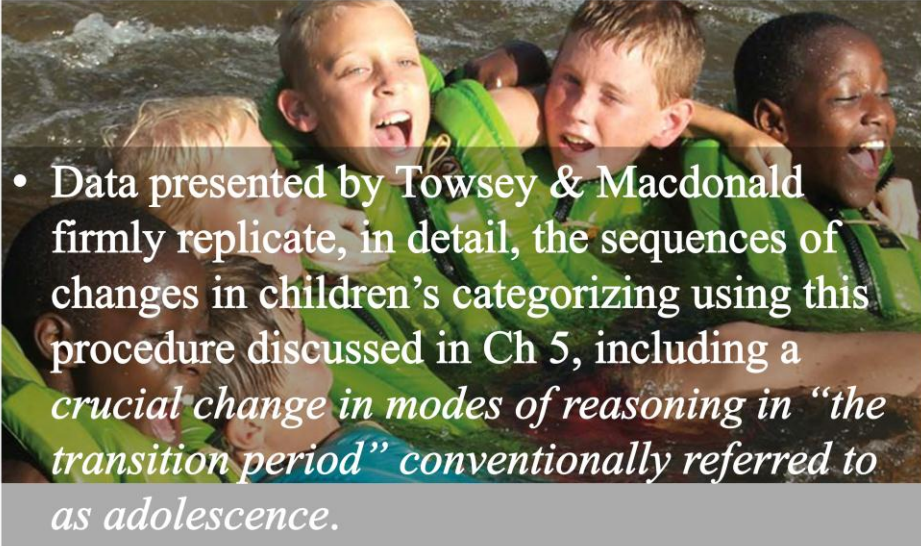
- Data presented by Towsey & Macdonald firmly replicate, in detail, the sequences of changes in children's categorizing using this procedure discussed in Ch 5, including a *crucial change in modes of reasoning in "the transition period" conventionally referred to as adolescence.*

My purpose in these remarks is to continue the discussion started by David Kellogg and Paula Towsey about concept formation in Chapters 5 & 6 of Vygotsky's *Thinking and Speech*.

As you can tell by the title, my focus here is going to be on cultural differences and performance in concept formation tasks roughly of this kind that we see in Chapters 5 & 6.

The Sakharov/Vygotsky Blocks Procedure as a Model System: Ch 5

- Focus on the cultural conditions that produce this kind of regularity as people grow older

My focus – the conditions that produce this replicable sequence and particularly, the role of formal instruction in writing mediated schooling

So, on [this] the second slide what I'm basically pointing to is our common starting point is the fine replication that Paula and Carol Macdonald did in conducting the Vygotsky-Sakharov experimental procedure to a fair number of people in South Africa of differing ages. And that the work is really exemplary for the detail and the care with which they present the data; conducted the experiment; so, it's really a nice result to think with. But I'm going to focus on – not on the procedures at that level – but rather on the conditions and in particular the cultural conditions that produce this kind of regularity as people grow older and to focus in particular on the roll of schooling: schooling mediated by a written language in supporting the kind of results that we see there.



Рис. 35. Ташкент, 1929 г. Лев Семенович ведет занятия в Первом САГУ.

## The "Transition Period": Adolescence

- Vygotsky (and Towsey & Macdonald) mark a qualitative change from thinking mediated by complexes / preconcepts / pseudo-concepts to true concepts in the transition from childhood to adulthood

- In CH 5, Vygotsky never seems to get to a definition of true concept

In [this] the next slide I'm sort of pointing to the period of adolescence, the transition from childhood to adulthood, as a really critical time when it's said that there is a qualitative transition in the nature of problem solving when you move from either some more child-like form – complexes, pre-concepts, pseudo-concepts – to what are called true concepts or full adult concepts.  And I note at the bottom of the slide that Vygotsky never seems to actually define for us what he means exactly by a true concept which has led to a reasonable amount of controversy: because sometimes it's equated with a scientific concept, sometimes it's not, and that's going to be an issue for us.

The "Transition Period": Adolescence

Towsey & Macdonald offer: "One of the most obvious differences between adults in this study and the other groups is that all of the adults conducted their moves in solving the problem of the blocks with the implications of these moves in relation to the totality"
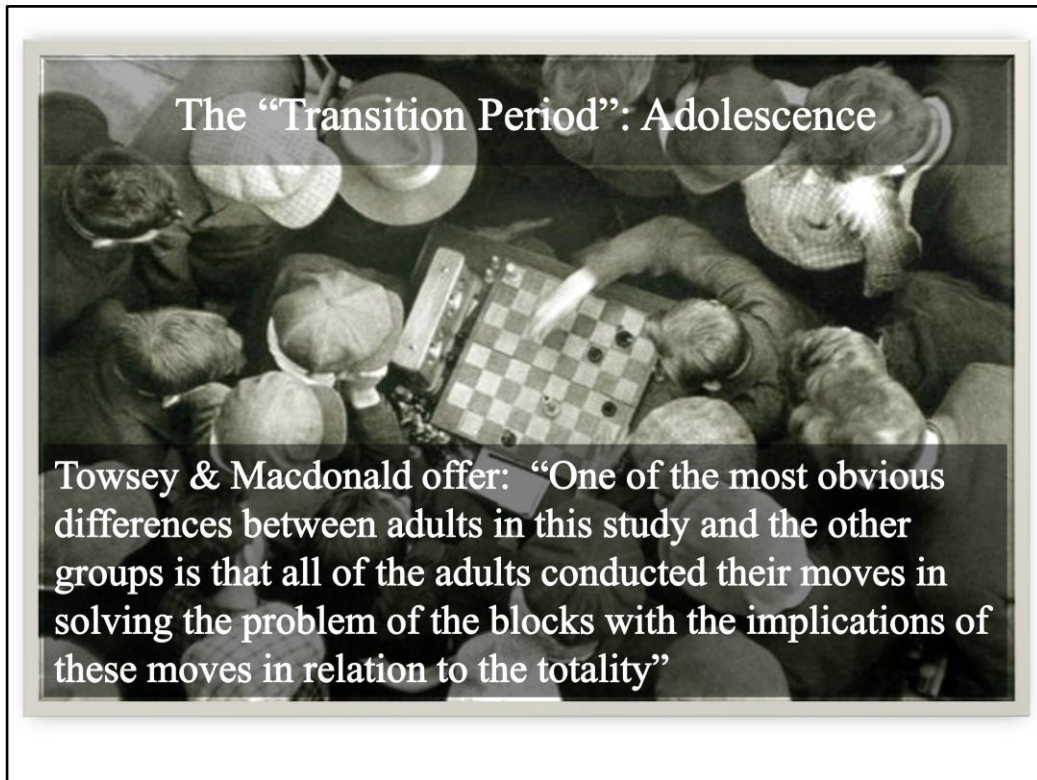
I like the definition – because it seems plausible to me – that Towsey and Macdonald offer, sort of indirectly, about what it is that characterises a true concept and that is that, unlike children, the adults in their experiment went about solving the problem in a more systematic way in terms in which they put it is that all of the adults conducted their moves with the implications of these moves in relation to a whole. So the sort of systematic nature of things which incidentally is not at all dissimilar, at least on the surface, from Piaget's definition of formal operations.
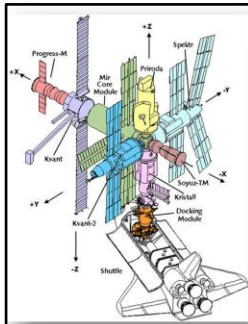
True Concepts (?):
Ch 6

- A "true concept" seems about equivalent to a scientific concept; it seems, ideally, a closed system in which there are meaning-meaning relations between scientific concepts that are related to "objects" by spontaneous concepts. They form a system whereas the lower lying concepts do not.

- A.R. Luria in 1987
  "Afterword" writes that "the basic feature of a scientific concept is that it necessarily introduces the object that it designates in a *system of logical categories and oppositions.*" (p. 366).

- Of Ch 5, ARL refers to "true verbal (verbal-logical) thinking."

Okay, so then, looking now at this issue of true concepts a little more and going to Chapter 6 where this term is being used, I note that using a true concept seems to be equivalent more or less to using a scientific concept (at least as we encounter this term in Chapter 6) and I'm characterizing it by saying that it seems ideally to be a closed system in which there are meaning-meaning relations between the concepts that are related to objects (the question of what constitutes an object is interesting) but they're related to objects by spontaneous concepts. They form a system whereas the lower lying spontaneous concepts do not. This same idea seems to be clearly stated by Luria in the "Afterword" in which Luria writes that "the basic feature of a scientific concept is that it necessarily introduces the object that it designates in a system of logical categories and oppositions." That's where he refers to this as true verbal logical thinking which is quite relevant to his subsequent cross-cultural research.

So in [this] the next slide, I ask how, from a Vygotskian point of view, does culture enter the picture of concept formation in ontogeny and I have a quotation there from Chapter 5 distinguishing between the true concept and prior forms of concept, or between spontaneous concepts and scientific or true concepts, that "the basic difference between these two qualitatively different kinds of intellectual activity consists in the transition from unmediated intellectual processes to operations that are mediated by signs." I found that somewhat confusing when I read it; it seems to me that lots of the early versions of concepts are in fact sign mediated – they're just sign mediated in a different way. That seems to me a little odd and problematic to equate only true concepts not pseudo-concepts, other language mediated concepts as also constitutive of cultural processes and, therefore, of higher intellectual processes. But I think that remains for us still to explore.

## How Does Culture Enter the Picture?

p. 160ff
discussion of thinking of "primitive peoples" who are said to think in complexes related to everyday activities, not in verbal-logical fashion

Luria (p. 365): diffuse / situational / concrete vs categorical / verbal-logical applies to "thinking of people at various stages of cultural development"

Now there are a couple of other points that indicate where culture enters the picture. So, this first one, culture enters the picture as a sort of "mediated-unmediated" - mediated being culturally mediated. Then, there's a discussion of thinking of what he calls 'primitive peoples' often in a translation such as 'uncultured peoples', "natuurvolke" in Germany, who are said to think in complexes. These complexes are related to everyday activities and are not related in a verbal logical fashion. I have this comment from Luria from p. 365 commenting again on *Thinking and Speech* and he makes this contrast between diffuse/situational/concrete concepts versus categorical (which I take to be "true" [concepts]); that they [categorical] could be true or verbal-logical concepts. And he applies this distinction to the thinking of people at what he calls various stages of cultural development: so now you're getting the historical changes, the cross-cultural changes, [that] constitute a developmental-historical change, such that verbal-logical comes later culturally than diffuse and situational… Kind of as if ontogeny is recapitulating a particular view of cultural history as progress here.

So that leads to the question what brings about true concepts? Vygotsky comments the motive for it comes from the sociocultural environment. That's interesting… In ontogeny, we have both biological and sociocultural forces interacting. And I note that at many points in Vygotsky's writing, it seems that the change that's supposed to take place during the transitional period of adolescence is universal. And it seems in various of these writings that adults think in true concepts; adolescents are in the transition from complexes to true concepts; and that this change is driven by, quote: "The tasks that are posed for the maturing adolescent by the social environment - tasks that are associated with this entry into the cultural, professional and social life of the adult world." Well, that should apply to everybody. We shouldn't get cultural variation then.

## The Centrality of Instruction
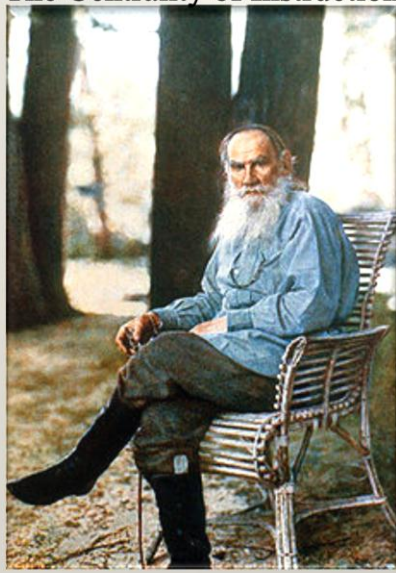
- Point I missed in translation of "obuchenie" as learning in LSV essay published in 1978. The implicit notion of universal change is belied not only by idea of "cultural development" but by many explicit references to the centrality of deliberate instruction as the source of systematicity necessary for true concepts.

- "Instruction is the source of the development of this new type of concept" (Ch 6, p. 194) (referring here to scientific concepts).

So where does this stuff about until you get to true concepts, it's not culturally mediated or that primitive people may only be able to think in complexes? That means they can only think in a pre-adolescent way… And that's the issue that I sort of want to take up.

Now, because it's a kind of sore point with me because I kind of did not get this for years and years, I'll point out that in the earlier edited writings of Vygotsky that I was associated with in *Mind in Society*, this word that we translated (I didn't translate it but accepted the translation), as "learning" and interpreted it that way, but really it's better to think that of what Vygotsky was thinking about is crucial with respect to zones of proximal development and to intellectual development more generally was "deliberate instruction". And "deliberate instruction" in schools, mediated by written language, and using the most current scientific concepts available in society. And you can really get the impression here that this kind of systematicity pushed on the child by the environment is necessary for new concepts to arise, and if one doubted this, then I have this quotation on p. 194 "Instruction is the source of the development of this new type of concept."

So it looks pretty much like if you haven't gone to school, and gotten educated, then you can't form true concepts. That's kind of the way the thing looks right there.

And in [this] the next slide I go over this point and note that, at least the way in which a lot of people characterise non-literate societies, there may be individualized, deliberate instruction of the sort that looks like observant participation or guided participation or various of these terms that are used for informal instruction but not the formal kind of instruction that Vygotsky is talking about in schools. And then I note that this nice smooth curve that Towsey and Macdonald provide that replicates Vygotsky beautifully: there's a perfect correlation between the age of the people that they are working with and the number of years of formal education that they've had. So this still leaves us with this question: I think that if we follow the Vygotskian logic of development, as coming from the outside, and the centrality of instruction to conceptual development, then it's hard to avoid the conclusion that primitives think like children. And that's what concerns me.

## Cognitive Heterogeneity – Common Ground?

In experiments with adolescents, it became apparent that the primitive forms of syncretic and complexive thinking (as well as potential concepts) begin to appear less frequently in their thinking and they begin to use true concepts in thinking. However, these processes of transition are not mechanical processes, where each new phase begins only with the completion of the previous one. The developmental process is much more complex. *The various genetic forms co-exist,* just as strata representing different geological epochs coexist in the earth's crust. This is more the rule than the exception for the development of behavior generally. Human behavior is not consistently characterized by a single higher level of development. Forms of behavior that have emerged very recently in human history dwell alongside the most ancient. The same can be said of the development of the child's thinking. A child who has mastered the higher forms of thinking, a child who has mastered concepts, does not part with the more elementary forms of thinking. In quantitative terms, these more elementary forms continue to predominate in many domains of experience for a long time. As we noted earlier, even adults often fail to think in concepts. The adult's thinking is often carried out at the level of complexes and sometimes sinks to even more primitive levels. When applied in the domain of life experience, even the concepts of the adult and adolescent frequently fail to rise higher than the level of the pseudoconcept. (p. 160)

So, my next slide is called "Cognitive Heterogeneity" and it's a passage which always impressed me in Vygotsky, and it seems to me to point toward how we can start to reconcile what seems to be a contradiction, at least a certain very problematic issue in Vygotsky's writing, and I've labelled that graph "Cognitive Heterogeneity - could it be a Common Ground?". What that long quotation – you can read this at your leisure – but I take it to be what's really important here is that Vygotsky now offers up a notion of the stage transitions that is not sort of, first you're in Stage A and then you move to Stage B and you leave Stage A behind. Rather, he is saying here that the various developmental forms exist at the same time and he uses this geological metaphor that they coexist in the earth's crust and points out that a lot of the time when adults are thinking, they're not thinking in true concepts; they're thinking in complexes or in pseudo-concepts. And I would add that some of the time they're probably thinking in heaps and chains: we see this relatively often, so you get this picture of a lot of heterogeneity; not just that adults are always thinking in true concepts. That strikes me as really plausible.

And then, that brings you then to the next slide, to this question of the situational or activity specific constituents of conceptualizing. So, I point out here that we have an asymmetrical situation. If you've been to school, then you develop, like everybody else, you develop spontaneous everyday concepts, but undergoing systematic instruction, backed by the accumulative scientific knowledge that accumulates in written culture which is closely associated with formal schooling, then you can at least get into your cultural and mental toolkit the use of true concepts. But if you haven't been to school, where are they going to come from? They aren't. And so the way out of this, it seems to me, is to not consider true concepts and scientific concepts in the normal use of that term, [eg], a contemporary concept of oxygen, or the contemporary concept of an atom, or a molecule, or of exploitation, or to grant scientific status the social sciences… And that we allow for the possibility that people could form true concepts in the sense that their systems of meaning that interact with each other in a relatively consistent closed system and constitute a sort of theory that then gets worked a lot through everyday concepts of various kinds that are related to the particular objects of human activity. If you can do that, then you can start to consider the possibility that, yes, forming true concepts requires particular forms of social life, but it doesn't require schooling. And that then leads us into not just a logical critique of the scientific experimentation, but an actual search for concrete examples of the development of systematic thinking associated with true concepts that Vygotsky talks about, but in the absence of schooling.
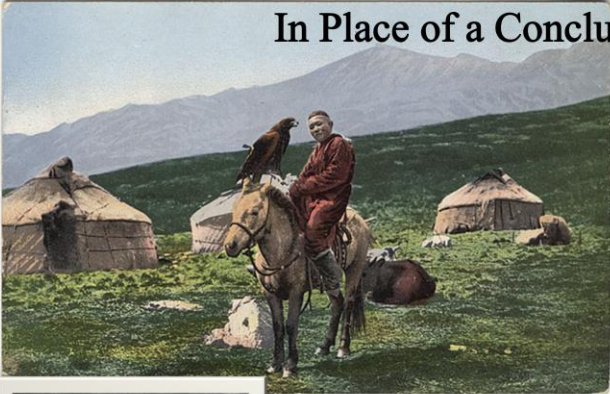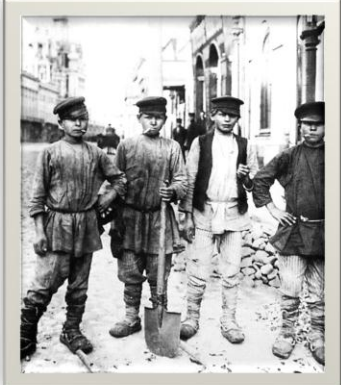
I have in place of a conclusion here, just the point that we're going to have to engage in a somewhat different kind of research if we're going to try to figure out whether or not this transition from adolescence to adulthood is universal. I'm going to guess that it is, and, if it is, there are going to be domains of life within which people have a fairly rich theoretical understanding; something that might be like an ethno-science, and that in making sure that kids learn about that way of thinking and have that as part of their cultural toolkit, they bring about the successful reproductions of their own societies. So I think that I'll stop there, with lots of open questions, and an invitation for people to join in the discussion.

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For the picture of the boys on the river, thanks to Lapalala Wilderness School
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# A final note of thanks

David and Mike thank Paula for illustrating and animating their presentations and for editing and fine-tuning the audio tracks in this production.

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