Chapter Five: Presentation of the Results

The results of this study will be presented in chronological sequence, from the three-year-old group through to the adult subjects. Several upfront observations will be made about each group in this study and then the findings will be discussed in relation to Vygotsky's (1986) writings on the development of concepts, the adapted scoring method of Hanfmann and Kasanin (1937; 1942), and my own for the transference exercise.

Although the responses of each subject who participated in this study were analysed in depth, recorded qualitatively and were accompanied with photographs in each case, a presentation of all of these 60 participants would be too cumbersome to include in this research report. Subsequently, a shortened version of each age group will be presented in this chapter. For those readers who would be interested in obtaining the detailed descriptions of each subject, this information can be made available.

The three-year-old subjects

The three-year-old subjects in this study were the only group not to include five males and five females, because during the three days I spent with the children prior to the study, many of them were away. Subsequently, eight females and two males participated in the study.

There are several upfront observations about the three-year-olds in this study: the function and meaning of 'the word', and the exposure to the nursery school programme/curriculum and the attendant discourse learnt by the children of what is expected of them in teacher/child interaction. These two observations and the findings are closely interlinked.

Firstly, the function and meaning of 'the word', in this case, the words *cev*, *bik*, *mur*, and *lag*, in nine cases out of ten did not serve to organise the activity. However, when the word *mur* was coupled with the instruction "to find other blocks that you think might be the same kind", the subjects seemed to focus on "the same kind" rather than "the same kind as the *mur* block". With many of these subjects, the words for different shapes and colours were often inconsistently used, so it was possible that the introduction of an artificial word meant little to them.

In response to 'finding blocks of the same kind', however, three subjects initially selected shape (S304F, S308F and S310F); two subjects selected colour (S301F and S305F); whereas for three subjects the exemplar block and the instruction served no significance – they disregarded these entirely in favour of constructing syncretic heaps (S302F, S306M and S307M). Further, one subject (S309F) was so spontaneous and unstoppable that she launched straight into the game without waiting for any instruction: she found a circle, which was discovered to be able to roll like a tyre; next, the round orange *lag* that "is the Daddy block"; and then the yellow *lag* trapezoid was a chair that could "sit" in a variety of different ways, depending on how it was turned (five of the six sides were used to demonstrate this). The exception to this trend of the meaning and function of 'the word' came from one subject (S303F) who was, from the outset, fascinated that the blocks have names represented by labels.

Secondly, the exposure to the nursery school 'discourse' and curriculum or programme appeared to have influenced these young children's exposure to geometric shapes, colours, and counting, and to the responses they were likely to give in answer to questions from adults. (The extent

of this influence is not to be taken here as quantitatively established as it was beyond the scope of this study to do so: suffice it to say that in the short time I spent at this nursery school, colours, shapes, and counting were in abundant evidence in displays and as part of 'rings', the semi-formal sessions conducted in preschools.)

The emphasis on colour, shape, and counting in terms of the discourse these children have learnt was evident in, for example, when I presented the children with a picture of the little ducks for the song *Five little ducks went swimming one day*. When asked such questions as "What can you tell me about these little ducks?" or "What do you think this little duck's name could be?", the children responded by counting or naming the colours of the ducks.

Nine of the ten participants in this group formed chain-like syncretic heaps of blocks during their sessions, where groups of blocks meandered along from similarity of shape or colour to other apparently arbitrary or chance selections of blocks added to the construction. I refer these as 'chain-like syncretic heaps', and not Vygotskian 'chains' for the following reasons:

- the exemplar block's *name* did not serve as serving a starting role for these children (the exception above noted) because no attention was paid to it (the name was apparently disregarded and the exemplar's concrete characteristics seemed to serve as the starting point);

- the subjects did not seem to distinguish between their own (subjective and/or curriculum-influenced) impressions and the actual bonds between things, which would mark a step towards objective thinking more characteristic of Phase Two complexive thinking;

- the bonds which these children made between the blocks were seldom consistently concrete and factual because in most cases, building towers, changing principles, introducing a story or referring to a block as "the Daddy block" or "the green moon" were in evidence; and

- because of the many examples of pseudoconceptual use of words such as 'same', 'different', 'big', 'small', and in terms of colour and shape.

It was also possible that the selection of colour or shape by six of the three-year-olds in this study represented the type of reaction which results from training, as discussed by Vygotsky (1986, p. 137). He notes Groos's observation that these 'potential concepts' "can be viewed as a product of habit", and further, that these elementary potential concepts are not indicative of intellectual formations. "There is no necessity to assume any involvement of logical processes" writes Vygotsky, because these are "present to some degree not only in very young children but even in animals" (such as hens) (1986, p. 137).

In this respect then, I did not consider that these children were forming 'chains' as part of complexes: their chain-like syncretic heaps could have been influenced by the nursery school programme/curriculum, which soon gave way to these subjects' syncretic, subjective, fluid, imaginative, and arbitrary responses, and their pseudoconceptual use of basic words such as big, small, same, different, and so on.

Five of the three-year-old subjects provided evidence of pseudoconceptual use of words such as 'big', 'small', 'same', and in relation to colours and shapes (S302F, S305F, S306M, S309F, and S310F). All in all, nine of the subjects constructed towers during the sessions – with two subjects

doing so right from the start (S301F, S309F); two subjects doing so near the middle of the session (S306M, S307M); and five of them near the end of the sessions (S302F, S304F, S305F, S308F and S310F). The only subject who did not build a tower was the subject (S303F) who was fascinated with the labels of the blocks. She also provided descriptions of the blocks in terms of colour and shape, and was able to group these consistently.

This exceptional subject S303F was, from the outset, fascinated by the labels as representing names of the blocks. Although she wasn't initially able to distinguish the different names visually, she would turn them over, look closely at the labels, present them to me to read them, and then place them into the appropriate groups, with some initial prompting.
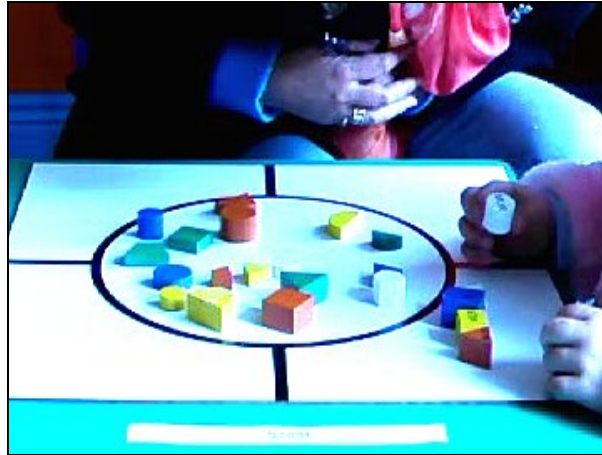
During the reading and sorting process, she appeared to be getting the perceptual impression that the blocks were grouped according to size (apparently evident in how quickly she placed the blocks and in how she handled them).

When this subject (S303F) had placed the blocks in this way and was told in confirmation "these are all the *lag* blocks", she touched each one and said "*lag, lag, lag, lag, lag*", and repeated this with the names of the other three groups, while looking closely at each label.

However, at this stage, ten minutes into the session, she was distracted by an outside noise and it appeared that her concentration span had reached its limit. When the blocks were mixed up again and she was asked to find a *lag* block, she chose a *cev* block.

It was, for me, a great privilege to be in the presence of this subject's dawning awareness that written words or labels are linked to sounds or spoken words.

Examples of Phase One: Syncretic Images

Overall, the findings of these ten three-year-old subjects were those – chapter and verse – as described by Vygotsky in 1934 (as translated by Kozulin in 1986): classic Phase One Syncretic Images - the mode of the by-now-famous "unorganized congeries" or 'heaps'. It must be borne in mind in the discussion which follows, however, that the three-year-old subjects (with the one notable exception above) were not constructing their syncretic heaps as potential *mur*, *cev*, *bik*, or *lag* groups, but ones which were of the same kind in relation to the physical characteristics of the blocks according to either shape or colour (at least initially).

*Find the blocks you think are the same as this kind –* mur *– and put them here…*
Vygotsky explains that the first stage of syncretic heaps formed in coming to understand the meaning of the artificial word is the "*trial-and-error*" stage characterised by random groupings added to by guesses and where the subject's response is to add another object using the same strategy. As mentioned above, these three-year-old subjects were not responding to trying to understand the meaning of the artificial word: what they seemed to be responding to was "same" and the physical characteristics of shape or colour.
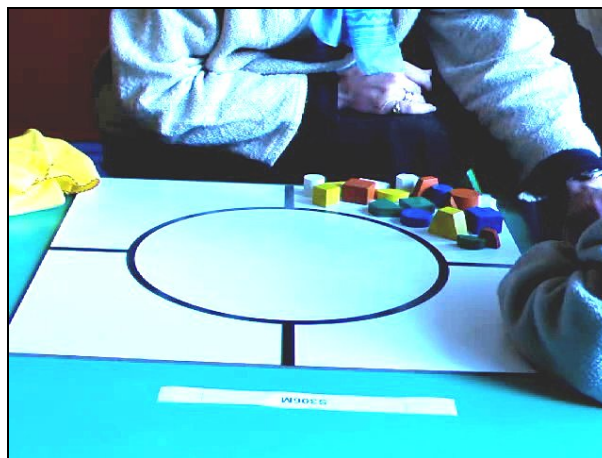
The example in the photograph above of a syncretic heap (S306M) started with the first two blocks the same colour, followed by a random selection of the others, and no basis or explanation was given, even with a great deal of prompting. The subject had been asked to find the blocks he thought were

the same kind as the *mur* sample block and he moved the blocks one by one until all of them were in the *mur* corner. Some blocks were turned over, their labels given a cursory inspection, and some were turned edge-on.

As can be seen in the photograph below, in this second attempt (same subject, S306M), a syncretic heap was formed on the opposite side of the board from the first group.
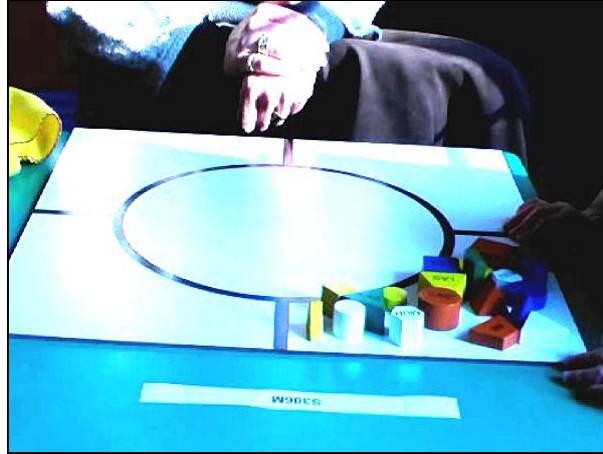

The blocks were moved across one by one and, once again, some blocks were turned and their labels looked at and some of them were turned edge-on – almost exactly the same strategy as used in the first grouping.

Other kinds of perceptual connections…

Vygotsky writes of the second stage of the syncretic as grouping, by spatial relations, objects in the subject's visual field, where groupings are made by visual perception of objects in time or space or by some other perceptual connection made by the subject.

In the photograph below was the result of this subject's (S310F) expressed need to find all the white ones first. She then paused for a moment or two, and placed the *mur* circle on the line (middle right) on the other side of the board (quite a stretch for a three-year-old!). She then decided that she needed a white block to be placed in each corner, and seemed to select the next few blocks according to a vague notion of symmetry.
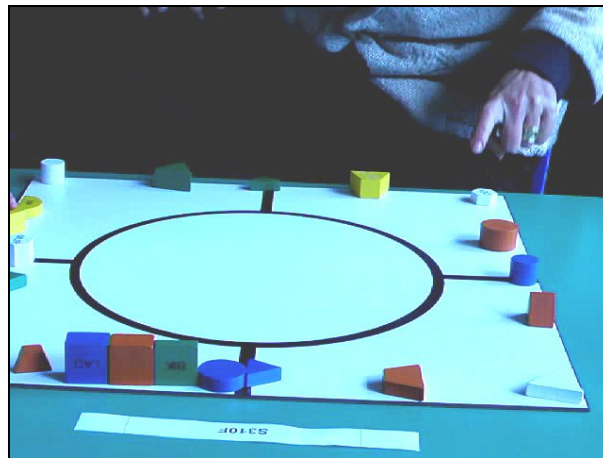

However, the selection process by this subject (S310F) for the geometric symmetry became increasingly random, resulting in this arrangement constructed by a desire to place the blocks geometrically around the board.

Incoherent coherence in a two-step process…

The third stage of the syncretic mode, according to Vygotsky, is a combination of the first two stages, where it becomes a two-step process from the heaps already assembled, but which are still incoherently coherent.

In this Stage Three example below (S309F), a house was specially constructed (green square with blue roof), and it had a tree (green triangle), stairs (orange triangle), and a carefully placed and angled green trapezoid door (partially hidden).
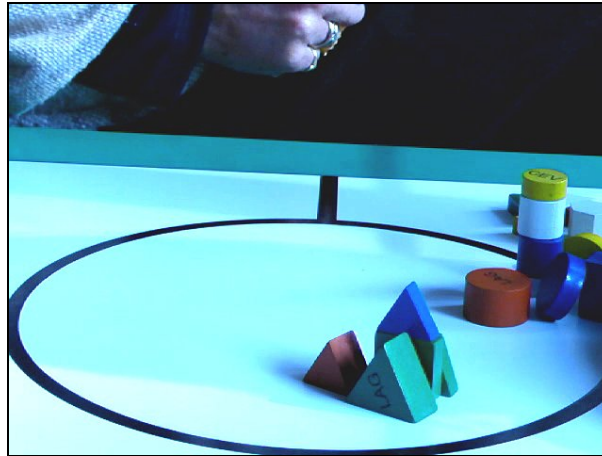

In the photograph below, the door was opened wide to "let all the other blocks in". The "other blocks" had been selected first as the circles, then the colour of the last circle (yellow) led to the squares being added to the chain-like syncretic heap, and then the basis for selection became more fluid and random, with the exception of "the RAINBOW" (off-screen).
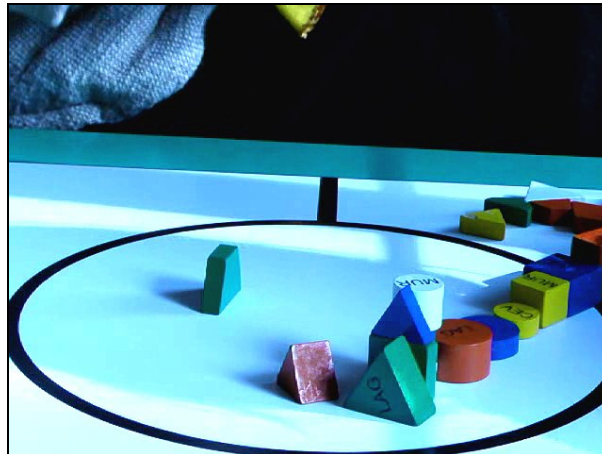
Heaps rather than solving problems or forming new concepts…

Vygotsky notes that the subject does this kind of unorganised heaping to solve a problem that, in adults, would be done by forming a new concept. The photograph below was an example of what an adult would not perhaps do.

Instead of finding other blocks that could be the same as the *mur* exemplar, in this subject's (S306M) third attempt, he placed all the blocks, including the sample *mur* block, in the centre of the board by carefully turning them on their edges or turning their names up.
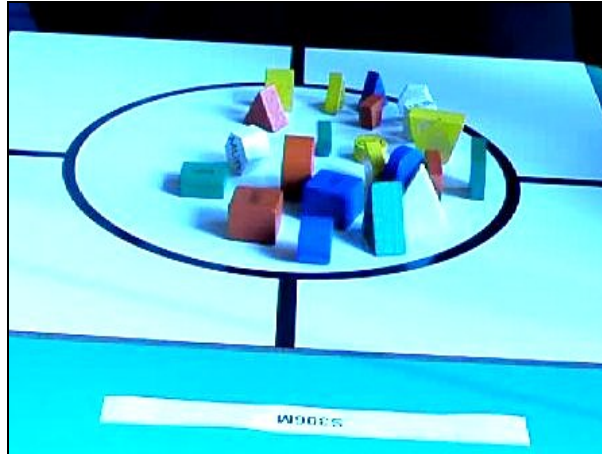
This example indicated to me that instead of forming a new concept, the subject explored the physical characteristics and possibilities of how the blocks could be placed (which included finding that the circles can roll, generally off the table!).

Silent syncretic heaps…

In the photograph below, this silent syncretic heap by this subject (S308F) was constructed with careful placement of blocks selected apparently at random. Ultimately, this subject's grouping resulted in townhouse-like constructions. It was difficult to understand why the subject grouped the blocks in this way, because she only said ten words during the entire session – and these in only response to much prompting. Although the subject (S308F) selected blocks apparently at random, albeit slowly, when new blocks were added to the construction, they were usually put next to blocks of the same shape. At one stage, my research assistant noticed that the subject seemed also to be guided by a desire to ensure that blocks of the same height were included, which was why they were perhaps placed on their sides or on top of one another (the *mur* hexagon, for example) to keep a measure of uniformity in height.

Explanations with charm and appeal…

The photograph below showed the subject's (S307M) response to being asked to find blocks of the same kind as the *mur* block.
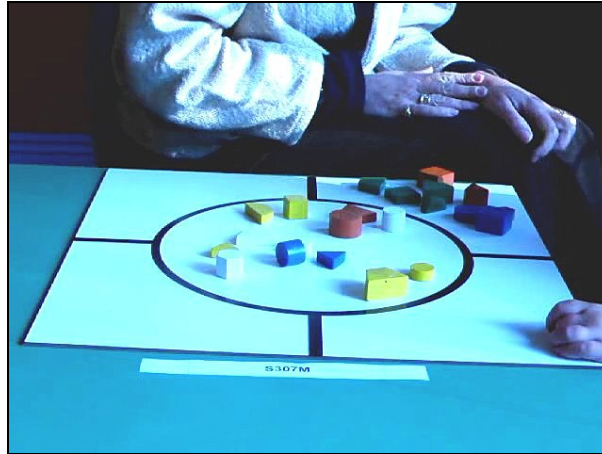
When the subject (S307M) was asked why the blocks were being put together, his responses were: "coz"; and "my mommy's got a sore leg"; and "green" (chosen at random and tossed into the group); and "same" (colour); and "same" (trapezoid to triangle); and "coz it's blue here!". The last explanation appeared almost to be a discovery – either that somehow the blue blocks had grouped themselves together or that I was too dense to see that it was in fact blue there(!).

The subject's attention then turned to rolling the circular blocks and making noises as he moved the other blocks around, apparently at random, but seeming quite at ease with the process of exploring the physical characteristics of the blocks. This subject (S307M) seemed to be enjoying himself thoroughly throughout his exploration of the blocks.

Grouping apparently unrelated objects but with real meanings for the subject…
The photograph below captured this grouping of disparate objects as this subject's (S302F) response to the instruction to find blocks of the same kind as the *mur* triangle.

In this chain-like syncretic grouping the subject (S302F) added a white *cev* hexagon (hidden) to the sample *mur* triangle (no reason given); then a green *lag* triangle ("because it's a circle"); and then a blue *mur* circle ("because it's a circle"). The subject then described the *mur* triangle as the Mummy, the green *lag* triangle as the Daddy, and the white *cev* hexagon as the Baby.

Making the blocks balance…
In this photograph (below), the subject (S305F) constructed a tower built of randomly selected blocks from those which happened to catch her attention. No particular reasons were advanced because building the tower took up a great deal of this subject's concentration: answering my questions was

the least of her concerns – making the blocks balance was.

In the photograph below (by the same subject above, S305F), the base of this tower started with the orange blocks, and then the idea of building the tower became more important once again – the selection according to colour (clearly seen at the bottom of the tower) was abandoned in favour of randomly selected blocks and efforts to make them balance.
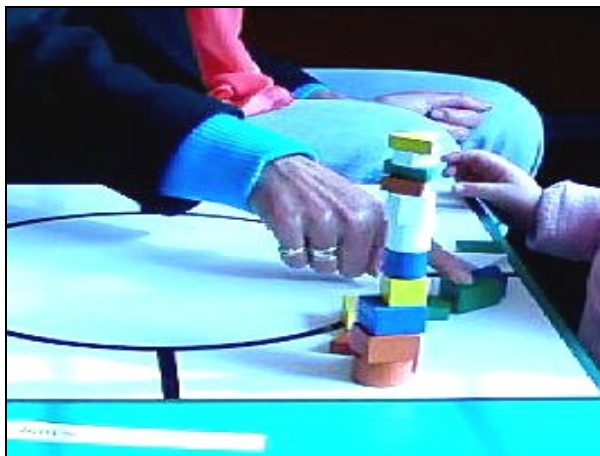

A discussion of the chain-like line of blocks next to the tower revealed the subject's (S305F) use of the word "flat" (which she introduced), to be fluid and arbitrarily assigned to blocks regardless of height ("Flat; flat, flat, a'so flat"). Whilst it was possible that these blocks were flat in relation to the tower next to them, I was unsure as to whether this was the subject's (S305F) intended meaning or not.

What finding the same can mean…
Further, Vygotsky (1986, p. 110) observes that the meaning of the sign/word in syncretic thinking is revealed as undirected and diffuse: the meaning of words "denotes nothing more to the child than a *vague syncretic conglomeration of individual objects*" that have, for whatever reason, come together as an image in the subject's mind.

In the photograph below (S310F), the word "same" was interpreted to mean putting the triangles together (bottom left), but did not include the *lag* triangle.
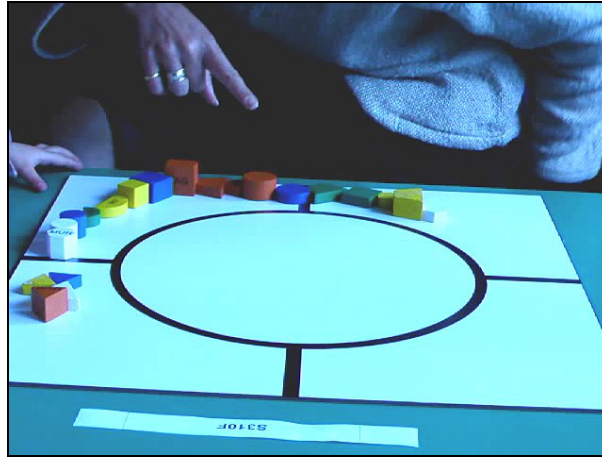
The understanding of "same" was next moved to the *mur* blocks (middle left), and then for no clear reason, to two flat ones, where the colour (yellow) seemed to have started a new sequence of "same" leading to the tall blocks (the *lag* triangle was hidden behind the up-ended *bik* square). The rest of the blocks were added at random and the notion of "same" appeared to have been forgotten.

Yellow – same and different…

Because the images in this phase of conceptual development are syncretic in origin, Vygotsky writes, the image in the subject's mind is unstable. The photograph below captured this subject's unstable images of 'same' and 'yellow'.
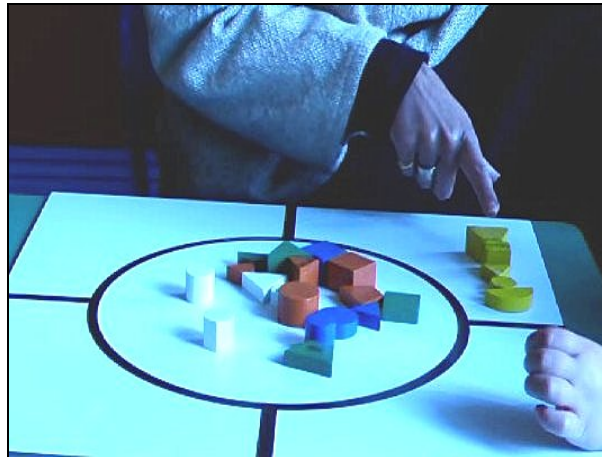
The subject's (S307M) response for this grouping was that three of the blocks were the same because they were yellow, and when asked to find blocks of a *different* colour, he selected two more yellow blocks and said they were different colours. It was not possible, even with prompting, to find out what in particular it was for the subject (S307M) that made two of the blocks different. This subject's fluid or unstable use of words for colour, size, and shape occurred before this photograph was taken, and continued throughout the session. In addition, various blocks were added to groups while being accompanied with loud noises such as "Daing!"; "Pink!"; and "Whoops!".

In the photograph below, this "truck" (S310F) started off with "all of the big ones" (bottom left), and then the selection from the yellow *cev* circle (middle) became less clear: the sequence of selection changed to "colour people, colour people" and the "driver" (top middle) of the truck underwent several identity crises.
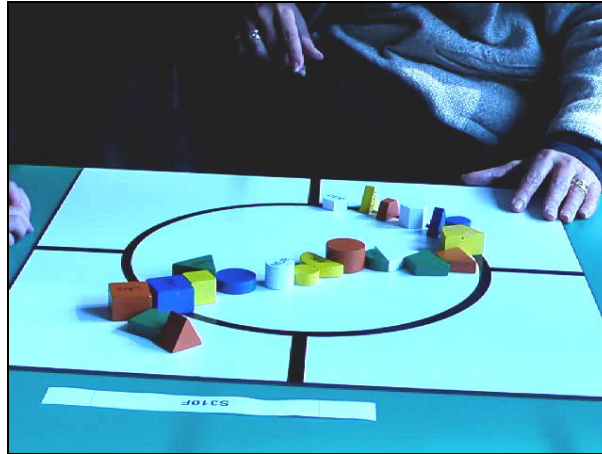
The initial understanding of "big" included both wide and tall but small, and then, because it was unstable to begin with, faltered even though two *lag* blocks, two *mur* blocks, and three *bik* blocks had not been included in the original grouping of "big". In addition, the subjective idea of the truck seemed to gain importance for this subject (S310F) and the subjective inclusion of coloured people and a changeable driver added to the instability.

Compensations…

Vygotsky also notes that syncretic groupings seems to result from a compensation: because there are few objective relations, an excess of more subjective connections is made and the subject makes the mistake or operates on the notion that these subjective relations are real ones. When the subject in the photograph below (S301F) was asked to find the blocks she thought were the same kind as the *mur* block, she immediately began to build "a house" by adding a square to the *mur* triangle. When I knocked at the door and called "Who is there?", the subject responded with "The big bad wolf!". The big bad wolf moved to the 'kitchen' (a square at the base), and the 'bathroom', and we were not allowed to look through the window (the orange *cev* trapezoid) in case he came out to bite us.
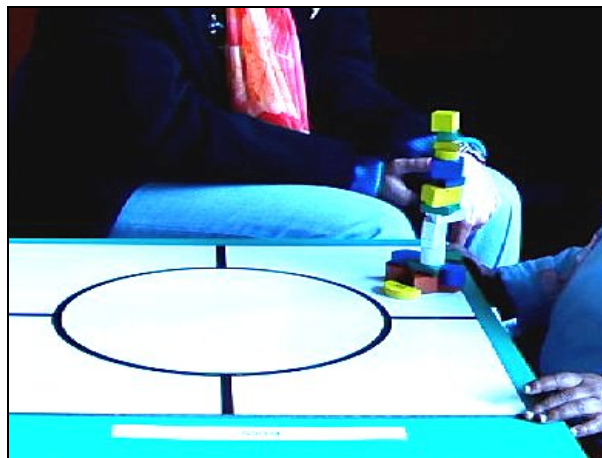
Finally the head of the big bad wolf (the orange *lag* circle) had to be covered up to keep him inside, even though he "wants to break the house down". Although the subject (S301F) concentrated on balancing the blocks in a subsequent tower, when asked why the blocks were being included, the response was "The big bad wolf is still lurking inside".

In the photograph below, a third tower was constructed by the same subject (S301F): the tower was built in response to being asked to find blocks the same kind as a *bik* block. The *bik* block was the trampoline ("you jump on it"); then a *lag* triangle was the Daddy jumping on the trampoline; and

as the tower continued to be built, with a great deal of re-arrangement of the blocks in the tower, the big bad wolf made his appearance again.

Much discussion then ensued on the big bad wolf biting the blocks, getting sick as a result, having a sore tummy, and having to go to the doctor.

The tower in the photograph below (about to go "Crash, bang, boom!" (S309F)) was a house that started with circles, and then squares, and then the building of the house apparently became more important than looking for similar kinds of blocks.
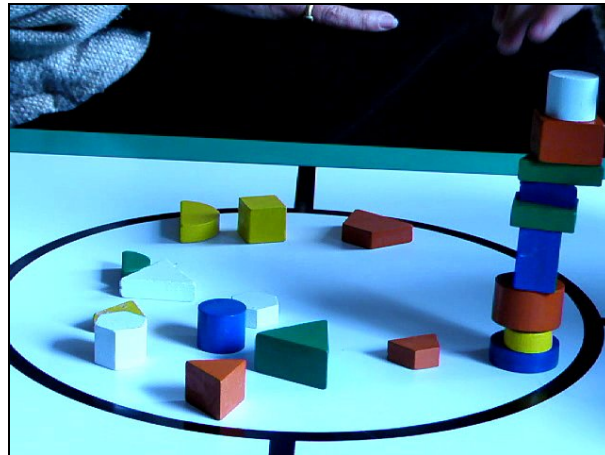
When the tower did go "Crash, bang, boom", the subject (S309F) also said "Thunder 'n lightning do too". In the photograph below was the next tower, constructed by the same subject.


She placed the Mummy block (the blue *bik* circle) and the Daddy block (the orange *lag* circle) on top

of the smaller blocks, and then declared "There's the rainbow!" (yellow *bik* semi-circle). The same two circles were consistently referred to as "This is the Mummy block" and "This is the Daddy block", even after the blocks had been mixed together again several times. And when I referred during the session to the yellow *bik* semi-circle as a yellow block, I was told very firmly "That's the RAINBOW".

Pseudoconceptual use of big and small, and same …

Vygotsky (1986, pp.110-111) writes further that the syncretic connections and heaps put together as representing a word's meaning are objective 'reflections' because the meaning of the word coincides (for the subject) with the connections that the subject herself has made.   Vygotsky points to the connections which occur with words in the subject's and adult's "habitual" environments, where in reference to concrete objects, adults' and children's word meanings meet sufficiently for mutual understanding.

In this grouping (below), the subject (S309F) insisted that the two *cev* blocks (middle) were small circles, while the *lag* circle, the *bik* circle (behind it) and the two stacked white blocks (a *mur* circle and a *mur* hexagon) were big circles.
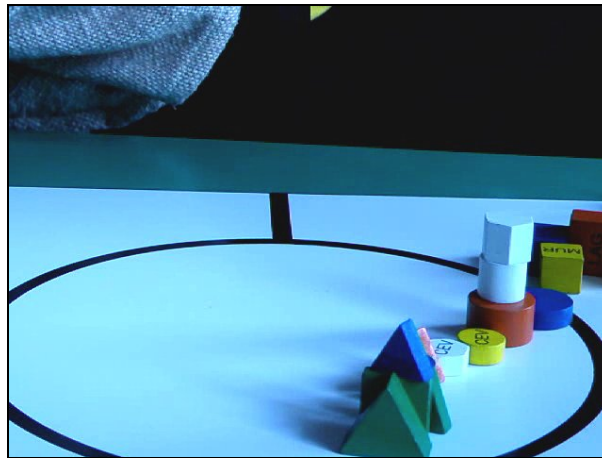
This subject's (S309F) unstable use of small and big did not differentiate between the diameter of the *lag* and *bik* blocks or the height of the two *mur* blocks, although the *cev* circles were small compared to the *lag*, *bik* and *mur* blocks.

In the photograph above, toward the end of her session, the subject (S310F), who had by then manipulated the blocks in a variety of different ways for about fifteen minutes, was asked to find all the big blocks, and then all the little ones. She sorted the big ones in a way that included all the *lag*

and *mur* blocks, and some of the *bik* blocks (as she did in similar fashion with the truck earlier). In addition, the little ones included all the *cev* blocks, and two *bik* blocks

The blocks were put back into the middle of the board and mixed up really well and the subject (S310F) was asked to find all the really big blocks, and all the really tiny, little blocks:
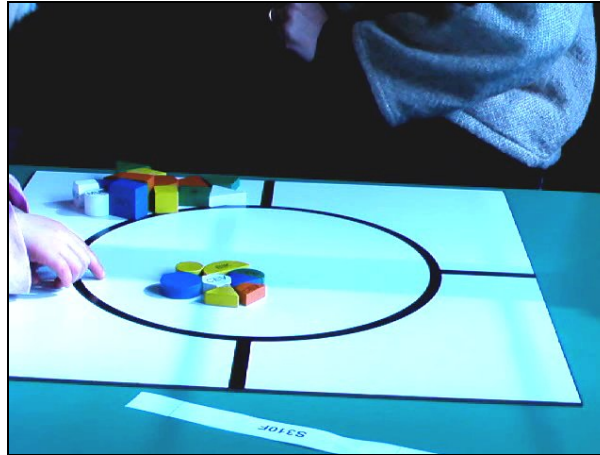
she repeated the sorting in exactly the way she had before, down to the last block, and insisted (pointing) that these were the little, tiny blocks, and "those [top left] are all the big ones". This subject's use of 'big' and 'little' was not entirely accurate, but was still meaningful enough for adults' and children's word meanings to meet sufficiently for mutual understanding. It was most interesting to see that, on three occasions, this subject used the same method for big and little: it could be argued that the subject's visual acuity was not well developed enough for her to distinguish between diameter and height at the same time. However, this would not necessarily be the most valid explanation, as this subject had grouped the blocks according to the same visual cues three times, with this last being an exact duplication of the grouping preceding it.

In the photograph below, this subject's (S306M) use of big and small differed from the two subjects above, as the diameter of the blocks was consistently used and he didn't mix the principles of tall and small, and big and flat, as did the two subjects above.
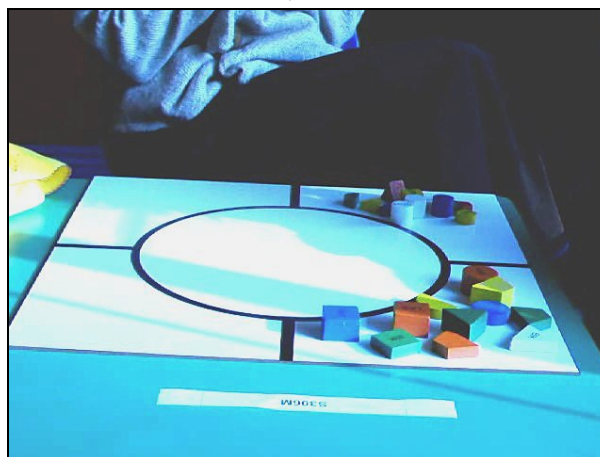
It's not the same…

In the photograph below, after correctly naming the blue shapes which she had selected as being the same, this subject (S305F), when asked to find more circles, selected the orange *lag* circle, and in this photograph was in the process of removing it from the other circles because "it's not the same". For this subject, the colour of the orange circle excluded it from being "the same", despite the fact that

she had been asked to find more circles, not more blue blocks.

In the photograph below, when asked to find blocks of the same kind as the triangular *mur* block, this subject (also S305F) used the same 'logic' as she had done in the photograph above.

The subject (S305F) lined up all the orange blocks because they were the same colour, but would not include the *cev* trapezoid (slightly hidden, middle) because it was "not the same". It was possible that the size of the *cev* trapezoid was what excluded its being included with all the orange blocks, because they were bigger.
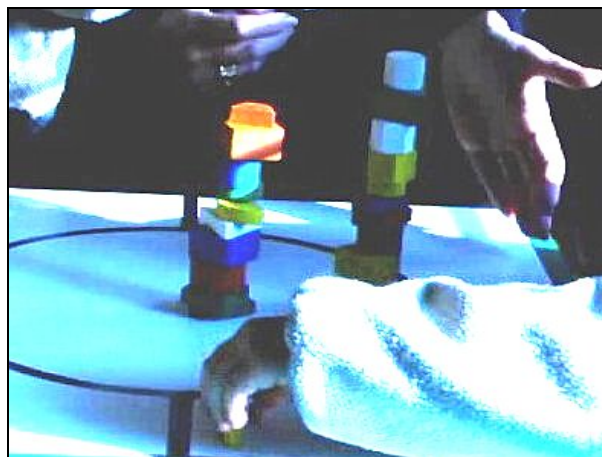
The photograph above provided an example of several syncretic towers that were constructed by this subject (S306M), where the explanation for each block added to the towers was "and this one, and this one, and this one". Most of the time, constructing the tower became of overriding importance to

these subjects as they added blocks to increasingly shaky constructions – and giving me reasons was less important. The range of towers constructed by the subjects in this study and the height these towers managed to achieve before toppling over was truly astonishing – gravity defying constructions(!).

Hanfmann and Kasanin's (1942) adapted framework as an analysis of how subjects perform during the method of double stimulation in concept formation

The table below reflects the results of the three-year-old subjects in this study.

Subject's code	Interpretation of the task (1-3) per column				Levels of perfor-mance		Finding and mastering the solution (1-3) per column				Total score=36
N=10	Principle	Names	Sample	Totality	approaches scored from -1 to -3	Includes early	Solution	Formulation	Dichotomy	Repetition	
S301F	1	1	1	1	-2		1	1	1	1	**6**
S302F	1	1	1	1	-3		1	1	1	1	**5**
S303F	1	1	1	1	-1		1	1	1	1	**7**
S304F	1	1	1	1	-2		1	1	1	1	**6**
S305F	1	1	1	1	-2		1	1	1	1	**6**
S306M	1	1	1	1	-3		1	1	1	1	**5**
S307M	1	1	1	1	-3		1	1	1	1	**5**
S308F	1	1	1	1	-2		1	1	1	1	**6**
S309F	1	1	1	1	-2		1	1	1	1	**6**
S310F	1	1	1	1	-2		1	1	1	1	**6**
Averages	*1*	*1*	*1*	*1*	*-2.2*		*1*	*1*	*1*	*1*	*5.8*
Total scores	10	10	10	10	-22		10	10	10	10	58
Maximum possible	*30*	*30*	*30*	*30*	*120*		*30*	*30*	*30*	*30*	*360*

Table 1:   Adapted (Hanfmann & Kasanin, 1942) Scoring for Three-year-old Subjects

In the table above, all ten subjects scored 1 in each of the four categories of interpretation of the task and of finding and mastering the solution: this score represented the minimum allowable by Hanfmann and Kasanin (1942).

In the section of levels of performance, the three subjects who disregarded the instruction for the task in favour of immediate syncretic groupings scored -3 each; those who initially grouped the blocks according to shape or colour and then formed chain-like syncretic heaps scored -2 each; and the subject who was able to group the blocks according to colour and shape, and who was fascinated with the labels on the blocks scored -1.

The total for the group of 58 points out of a possible 360 represented 16.11 per cent of the maximum possible total.

Because the element of transference was not included in the sessions with the three-year-old subjects, I have not included a table of this for these three-year-old subjects. As it was not possible for this group of three-year-old subjects to come to an understanding – or indeed, with the single noted exception – to pay any attention to the names of the blocks, it would not have been possible

for them to say what the groups had in common or to use the words *cev*, *bik*, *mur*, and *lag* in describing the glasses and the candles. Their scores would have been 0 out of a total possible 16 points.

In the table below (and in subsequent tables with the other groups of subjects), the method of scoring for timing of Hanfmann and Kasanin (1937/42) has been used consistently throughout the study.

Subject's code	Total score for all blocks (NX5+NX3 in 1st column) and No. of blocks turned 2nd + 3rd			Supplementary scoring			Total score (between 1 and 165)
N=10	Total score for all blocks	No. incorrectly turned	No. correctly turned	Minutes	Incorrectly	Correctly	
S301F	105	21	0	13	105	0	**118**
S302F	105	21	0	16	105	0	**121**
S303F	105	21	0	13	105	0	**118**
S304F	105	21	0	15	105	0	**120**
S305F	105	21	0	16	105	0	**121**
S306M	105	21	0	20	105	0	**125**
S307M	105	21	0	12	105	0	**117**
S308F	105	21	0	23	105	0	**128**
S309F	105	21	0	13	105	0	**118**
S310F	105	21	0	17	105	0	**122**
Averages	*105*	*21*	*0*	*15.8*	*105*	*0*	*120.8*
Total scores	**1050**	**210**	**0**	**158**	**1050**	**0**	**1208**
Maximum possible		*210*	*210*	*600*	*1050*	*630*	

Table 2:   Supplementary Scoring (Hanfmann & Kasanin, 1937/42) for Three-year-old Subjects

For the three-year-old subjects, their scoring in terms of minutes and overturned blocks was taken as follows: firstly, all ten subjects 'turned' 21 blocks, as the names of the blocks (even for the subject who was fascinated by them) did not serve to organise the activity, and neither did the subjects of this age range come to understand what the labels meant; and, secondly, the time taken for each subject was relatively short, as this depended on their concentration spans and was not an indication of the time (as with older subjects) taken to solve the problem of the blocks. This supplementary scoring will appear skewered, even though the maximum number of turned-over blocks has been included. Although the first column appears to be a repetition of the fifth, the first column is the total of both correctly and incorrectly turned blocks (which becomes more relevant in the groups of older subjects).

The total supplementary score for the three-year-old subjects ranged between 117 and 128, where the main determining factor in this range was the number of minutes that the subjects played with the blocks. The fewest number of minutes was 12 and the greatest was 23 minutes, with an average of 15.8 minutes of a possible maximum of 60 minutes.