

SESSION FIVE - PRAXIC UNDERSTANDING AND 'BRICK-BUILDING'

Having introduced the learning tool – 'sorting', and used it to illustrate the application of some principles of child development and learning it will be profitable now to examine a tool which illustrates an entirely different aspect of learning and development – that of three-dimensional praxic construction or 'brick-building'.

A pattern may be perceived in two quite different ways whatever the particular sensory modality or modalities involved. A pattern may be constant, persisting to the senses relatively unchanged over a finite, often a fairly long, period of time. Potentially all the information from all aspects of the pattern remain available to the senses during the period of perception. If the observer does not take in the whole pattern immediately he can direct his attention to some detail and back again to the whole form, etc. This kind of perception – *let us call it sustained-or-constant-image perception* – constitutes the main form necessary to such a mental activity as 'sorting', or 'matching' (to be discussed later).

On the other hand patterns can also be built up of accumulations of simple perceptions occurring one after the other, the patterns being realised by the organism's storing them (not necessarily in order) in the memory. The form of such a pattern, unlike constant – image perceiving which may be represented by the simultaneous activity of many receptors regularly distributed about the organism, must be thought of in terms of locations and directions within the space that surrounds the organism.

Clearly it is not possible to actually separate the two forms of perception and both must be learned through practice, the former by the organism's constantly locating the sustained patterns, (for recognising, comparing and contrasting as in 'sorting' and 'matching'), the other, *which I call 'praxic' perception* from an increasing understanding of space and of the movements of objects within that space.

'Sorting' as a mental activity is almost wholly concerned with the nature of the objects being allocated or the sets of characteristics which determine their being associated or separated; with identification and similarity; with the more or less permanent or at least persisting appearances and attributes of things and materials. The relationships between them are of association in virtue of similarity and appearance, function, etc. (complete, part association or non-association). The particular location of an element and its relationship in space to another is irrelevant to the operation of the 'sorting' tool (and, as we shall see later, to 'matching').

Of course it is not possible to isolate things entirely from their behaviours or from behaviours which have the things as their objects; however in 'sorting' and 'matching', variation in technique, materials and circumstances is intended to 'average out' all that is irrelevant so that the child's mind might be focussed on the objects and materials to be 'sorted' or 'matched' and on the several operations to which the things are to be subjected. The converse of this would be represented by those activities in which the nature and appearances of things and materials themselves are of relatively little importance, the pattern or potential meaningfulness consisting in their relative positions in space and in

FIG. 3

changes in their form, orientation and location, in that is to say, their behaviours.

In 'sorting' we are concerned with elements which are (or contain or are composed of patterns which are) complete in themselves. It is these patterns which determine whether we shall associate two elements or whether two elements may be associated. The actual physical manner of association and the physical-spatial relationships between the elements within a set or between the sets are of little or no importance beyond the association itself which is eventually abstracted or freed from actual space altogether. Although states and operations of sets (subset, disjunction, union, intersection, etc.) are often represented by spatial diagrams it should be recalled that this is just a convenience and that they are entirely abstractable from physical space.

'Praxic' understanding is on the other hand concerned wholly with the spatial (and time) relationships between components which may ideally be reduced to sizeless, formless, propertyless elements. It is the actual relative distances (intervals) and directions linking the elements of a pattern, the directions, senses and rates of change of the movements of these elements during the production or modification of such a spatial pattern, which hold the praxic information. The patterns in space are residual evidence of the patterns of forces which produced the behaviours of the objects, that is to say their changes of form, orientation and location, and praxic understanding allows the recognition and interpretation of both the behaviours themselves when observed and, retrospectively, the spatial vestiges of such behaviours.

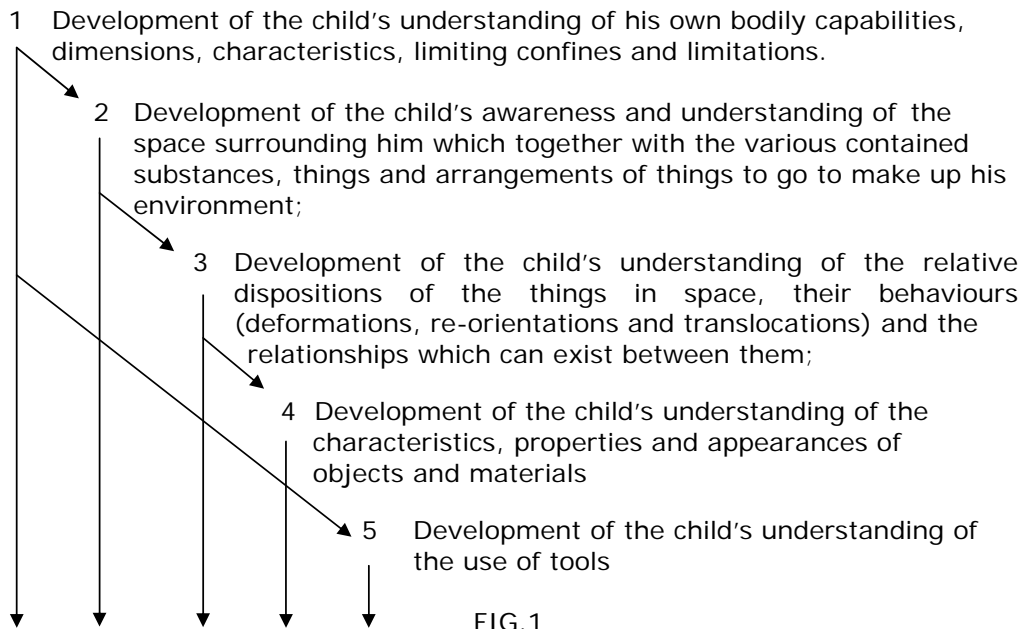
Early 'building' is dominated by the local conditions, each action of the child (assuming minimum outside intervention) leading directly from the previous one and until such a time as the child can anticipate the outcome of his actions sufficiently to cause him to attempt to 'copy' a model, that is to say to be influenced by other than his own immediate physical action, may be considered to be a general preparatory or experience-gaining period.

As with all but the simplest understanding 'brick-building' depends on adequate structuring of the space which surrounds the child's body; however, unlike 'sorting' and 'matching' activities which in due course can be abstracted almost entirely from spatial concepts, 'building' derives directly from space structuring, for at its most abstract it consists in the spatial relationships between parts. Hence just as the bodily image and space understanding grow from total bodily movements so does an awareness and understanding of the translocation and reorientation of components follow from them, arising not only from actually moving objects from one place to another but even more directly from moving the 'limbs' themselves.

As has been stated very briefly in an earlier note the human organism constructs a sort of model of the world by generating activity in the energy sensitive sensory 'receptors' of his body whilst imposing certain constraints upon the system so that the model of the world is built up of both spatial and temporal patterns of receptor activity.

The movements of the child's body then provide most of the potential 'information' for (a) the construction of his 'bodily image', that is to say his awareness of the extent, facilities, potential and limitations of his own body;

(b) the structuring of his bodily near-space, or the exploration and mapping of space relative to reference points on or within his own body; (c) the discovery and investigation of the appearances and properties of objects and surfaces to be encountered within that space; and (d) the discovery and recognition of the behaviours – that is to say the deformations, transformations, re-orientations and displacements of the objects or surfaces within that space. (See fig. 1).



It is progressive ordering of the environment space which allows the pinpointing of objects and their rediscovery following loss of contact with them, and which makes possible the monitoring of changes of form, changes of orientation and changes of location, that is to be our particular field of study for the time being and of which the nature and development of the 'brick-building' tool is to be exemplar activity.

The activity of 'brick-building' may be defined as the deliberate and conscious attempt to reproduce a three-dimensional structure from a model (a recorded image of the actual building of the structure, the completed structure, a graphic representation of the structure or a mental image, whether stimulated by instruction from another or arising 'spontaneously'). Such an act which does not need to prove in any way 'successful' (i.e. culminate in a fair copy of the model), or in its most general form – constructive praxis – to be more than a mental act, implies an active mental analysis of the model into its component elements and their spatial relationships followed by an active mental synthesis realised subsequently in real space in terms of actual concrete components.

Such a capacity for mentally analysing structures into the spatial and functional relationships of their component elements or structures and for defining the orientation of each part relative to the others implies its derivation from a precursor ability to define the positions and orientations of things relative to the

observer's own body, which in turn seems to presuppose the prior establishment of an understanding of certain primary planes and axes from which follow the concepts of relative closeness (to points on the primary planes etc.), relative direction and movement 'sense' and the derived concepts of relative orientation which represent the preliminary stages of bodily near-space structuring.

From the use of space relative to more or less static or fixed postures, through its use relative to changing postures, develops the child's understanding of space abstracted from actual need for reference to his own body, other objects etc. being chosen and used arbitrarily for this purpose. And from this spatial understanding, commonly aided by his increasing ability for moving bodily within the space, comes a recognition of himself as functioning as an object relative to other arbitrarily chosen locations. Hence the child comes to be able to judge the positions of things relative to himself, the position of himself relative to objects and the position of one object relative to another, and in due course to use coded references representing relative positions, as for example locations indicated on a map or grid, and verbal equivalents of directions and positions. (A child may perceive an object to be in front of, behind, or below him, at a recognised distance; may see himself as on, below or behind etc. something; or may note something to be in a certain relationship to another object, the orientation of the reference object being determined either by its own position in space or by its form, i.e. it's having a 'natural' top, front etc.). Later, under 'Communication and Language', I hope to show how conventional language reflects and is dependent on, is almost an inevitable outcome of, such non-linguistic concepts.

The child's constant movements continually using the seemingly infinite range of possible postures and, looked at from the converse point of view, necessarily exploring and using the surrounding space – locating, following, hunting for, re-locating and defining locations through reaching to secure, 'shaking' and reaching to dispose of – brings about and organises an enormous amount of experience of space, objects and substances and the behaviours of these objects within that space. From a relatively early stage (six months onwards) some of the child's influences on his surroundings are effected through an intermediate object or material but this, the precursor of experience in the use of tools, will be discussed later in relation to 'drawing', the other major praxic learning-to-understand 'tool'.

Only gradually does the child come to be able to transfer his interest and subsequently his understanding from his own activity or the thing acted upon to the effects of his action on that thing. That is to say his influence as a deliberate changer or modifier of the environment is inevitably relatively late in developing and hence his consciously setting out to produce a complex change in the state of the environment – to deliberately produce, shall we say, a simple brick structure, as opposed to simply enjoying bring two or more bricks into apposition – must be seen by a teacher, particularly a teacher of backward children to remain a fragile and precarious intention in the early stages and liable to regress in the face of obstacle or diversion to an earlier activity-for-activity's sake condition. Hence although this is an artificial distinction, because the physical make up of the organism may be viewed as the objects being displaced etc. it is necessary that the teacher constantly distinguishes between the things being moved and the organism moving them for it seems clear that a child's understanding of space and the changes of position and form of objects

and surfaces in space derives primarily from his own movements so that his eventual capacity for focussing his informed attention on the behaviour of an (external) object has distilled from his normally abundant experience of those of his own bodily movements which have brought about such behaviours. Practically-informed attention gradually shifts from the act of doing to the effects of the action on the object of that action.

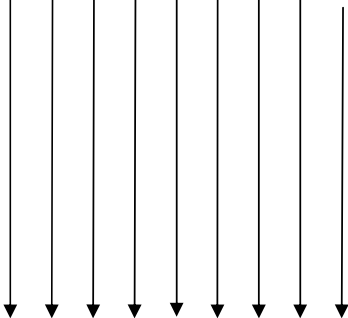
At any moment in time (for example in a two years old child) sensations from most parts of the body are capable of being consciously apprehended and during an active movement, shall we say reaching in order to pick up an object, vitally important sensations must be experienced continually from all parts of the body etc. Yet the child's attention is fixed on the object to be picked up and the end parts (i.e. the hand and fingers of his body) being utilised in this operation. Thus the process of increasing understanding must lead to the subordination of earlier rudimentary and fundamental sensation patterns to certain later derived ones in the directing and control of actions and the perceiving of components of the environment. This (evolutionary) process, culminating in the capacity for what I have previously called 'focussing', is one of the all-important conditions of adequate normal development. Hence, particularly in work with young children, those with limited movement, etc, a continual awareness of the possibility of incompleteness or distortion of this process of functional integration should inform all teaching so that its development or completing can be encouraged.

From a very early stage of development, even before the several main mechanical segments of the child's body have started to influence one another through external loop, they do of course affect one another's postures and actions directly through the substance of the trunk and 'centrally' through the nervous system, based on the 'postural reflex' mechanisms; however during even the early days and weeks much individual 'limb' learning takes place which leads to mutual influence between 'limbs' outside the body, by external loop connections, to increasing community of learned experience and to functional integration. (See Fig. 2).

EARLY DEVELOPMENT OF THE ENVIRONMENT-SAMPLING MECHANISM MONTHS

<u>Proliferation of the movement of the main mechanical parts virtually independently.</u>	0
<u>Overlap of activity of the several parts</u> leading to mutual influence, interference stimulation and <u>functional 'co-operation'</u> . The degree of co-operation at first depending on the bodily posture and orientation relative to gravitational influence. Integration of the whole as a result of external loop connections.	2
<u>Symmetry (Bilateral symmetry) of action.</u>	4
<u>'Focussing' of attention</u> , capacity for concentrating and directing awareness effectively through the set of bodily parts engaged in 'observing' or sampling environmental influences.	6
<u>Bilateral complemence</u> Complementary division of labour between the sides. A major aspect of the focussing which allows the free and fluid passing of an activity from one side of the body to the other and back, all parts supplying whatever is necessary whenever it is required.	8
<u>Delay and restraint in responding</u> - origins of actual choice between alternative candidates for focussed attention.	9
<u>Capacity for retaining perceptual images</u> substantially beyond the actual sensory event – 'Concept of permanence of an object'.	10
<u>Lateral dominance</u> A simple bias leading to an habitually preferred or prepared protagonist side in laterally asymmetric activities, the non-dominant side being equally habitually prepared for its subordinate and supplementary role.	12
<u>Early continuant ability</u> – resulting from a combination of a capacity for choosing between rival competitors for attention and an ability to act on retained images as if they were sensuous perceptions.	15

FIG. 2



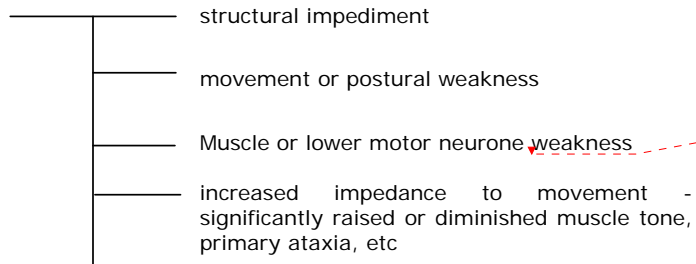
Diminution of the total amount of bodily activity below certain critical levels, whatever the reasons, will tend not only to slow developmental progress but also to distort it in a variety of ways. The nature of the primary impediments will determine the bias towards one or other main type of pathological development, whilst general slowing will encourage narrowing of individual pathways, failure of liaison between pathways, disturbance of the phase or time relationships between pathways, etc.

Unsatisfactory development of constructive praxic (with special reference to 'brick-building') ability may have its origins in any of several pathological conditions of the understanding quite apart from innate primary learning inadequacy.

These may be seen as impediments to the use and development of the basic environment-sampling apparatus which can be classed as primary or secondary (See Fig.3).

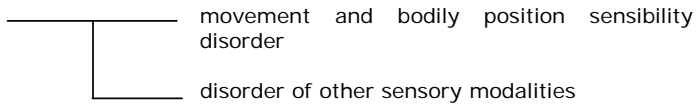
Primary Impediments

(i) Movement disorders
(Various degrees & distributions)



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(ii) Sensory disorders
(Various degrees & distributions)

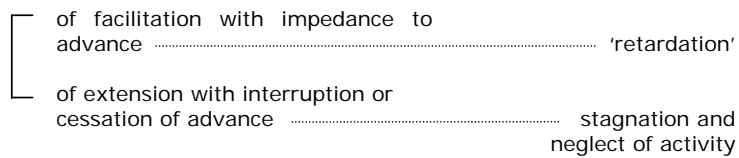


(iii) Disorders of the reinforcing mechanism

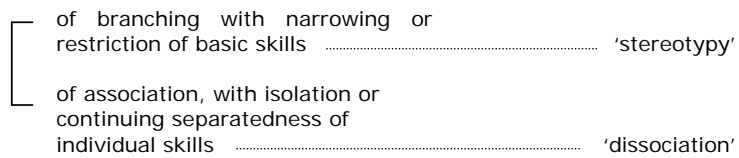
Secondary Impediments

a) Retardation (and distortion) of understanding

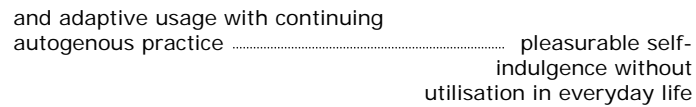
Failure of (i) Continuity



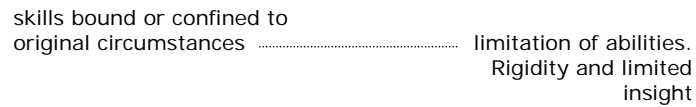
Failure of (ii) Proliferation and



Failure of (iii) Utility



and failure of abstraction with transfer of principles and insightful behaviour



(b) 'Handicap' of understanding

(i) Escape from, rejection or avoidance of feelings of unpleasure. Behaviours reducing unpleasure by the compensatory or competitive production of pleasure – humming, vocalising, squinting, toothgrinding, rocking, body juddering, head banging, etc. and secondary 'reward' activities as spinning objects, social attention-seeking etc.

(ii) Escape from, rejection or avoidance of conditions including unpleasure:
 Escape - physical withdrawal, withdrawal of attention (shyness, day dreaming etc.)
 Rejection - direct rejection or 'stubborn' refusal. Indirect rejection or 'displacement'. Competitive substitution.
 Avoidance or prophyllaxis – use of teddy bear objects and behaviours. Ritualistic behaviours. Obsessional organisation of surroundings.

Any of these 'handicap' behaviours can function in several ways simultaneously and commonly involves interactions with others.

FIG. 3

Primary impediments are those which have resulted directly from a structural anomaly of development or from trauma (mechanical, postural, sensory or affective disorders), whilst secondary impediments consist of learned habits of behaviour tending to seek after the familiar – *'retardation' behaviours* - or to avoiding the unpleasurable sensations associated (especially in vulnerable children) with the less familiar – *'handicap' behaviours*.

The signs of incomplete bodily integration and near-space structuring, and educational exercises suitable for redressing this defective state, will be discussed at a later date. Meanwhile the natural development and teaching of 'brick-building' will be described as if there were no gross inadequacy in this respect, however unlikely such a contingency in practice of teaching vulnerable children.

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1976