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From the archives

Editor's note: *The following remarks are extracted from an article by John Mason (1980), published in* FLM1(2). *They, along with the rest of his article, strike me as having some relevance to the writing published in the current issue.*

Bruner found it useful to distinguish three modes of internal representation which seem to describe stages in children's thinking. When asked a question, children seem to make use of the following internal representations:

Enactive: able to respond only by recourse to previous practical experience. The classic example is a number question for which the child turns to a balance and physically performs the required acts. Here the response is by the musculature.

Iconic: able to respond by recourse to mental images of physical objects or to an inner sense of pattern or structure. In the case of numbers having a balance in sight, or a drawing, can assist the work by extending the mental screen. Icons need no articulation because within a culture they need no definition.

Symbolic: able to respond by using abstract symbols whose meaning must be articulated or defined. In the case of number, 3+4=7 now has meaning, and no recourse to the balance or balance image is needed.

Because Bruner was looking at stages in children's development, giving a slightly different perspective to Piaget's work, people seem to have identified

Enactive: with physical toys
Iconic: with drawings and pictures
Symbolic: with words and letters

or, worse,

Enactive: with primary school
Iconic: with middle school
Symbolic: with upper school

and missed the essential qualities which I describe as

Enactive: confidently manipulable
Iconic: having a sense or image of
Symbolic: having an articulation of.

Notice too that symbolic expression must ultimately become enactive if the idea is to be built upon or become a component in a more complex idea. Thus to a pre-school child 1, 2, 3 are truly symbolic, having little or no meaning. With time and extensive encounters a sense of one-ness and two-ness develops which underpins the symbols and provides a source of meaning when 1, 2 and 3 are encountered in a new context. To proceed with arithmetic it is essential that 1, 2, 3 become enactive elements, become friends. If they remain as unfriendly symbols then arithmetic must be a source of great mystery.

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