

Prof. Rex Li's Writings

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Summary/ Abstract: My view on brain plasticity and the thesis of super-baby program.

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Brain Plasticity and Giftedness

The work of Alison Gopnik on babies' mind and Michael Merzenich on monkey brains (cf. Gopnik, p.120) tell much about brain plasticity.

In brain research, we repeatedly see that external world/ information/ environment impact the brain, with some parts grow more and forming more network. A metaphor is that "ideas/ programs" are written on the brain to make it run, for better or for worse.

These "programs" are provided by environment. We can have good programs —— open-minded, keep searching, enriching and updating; we can also have poor programs —— looping, fixation, blockage. An infant baby is somewhat like a blank slate (Locke), but with rich endowment of synthetic apron (Kant), slowly growing to maturity.

My conjecture (based on readings, research and thinking):

- (1) A baby brain is born different (individual difference) and is programmed to grow to maturity.
- (2) The process necessitates intake of external information/ stimulus.
- (3) Infants are genetically different with varied potentials in different domains of intelligences; external stimulus triggers or impedes its growth.
- (4) Plasticity, potentiality has limits, within its own psychological constraints (processing speed, connectedness, capacity, etc).
- (5) In principle, a general or specific program can be designed to create super babies (maximize its potentials) if we know the starting point of each brain in terms of individual differences and potentiality.
- (6) Intelligence is genetically pre-wired (a 5G network vs. a 2G network), to be triggered and enhanced in social/ environmental demand and information (written with different operating systems).

Self-reflection: When we use the computational metaphor, it is seductive to use terms like network capacity, software, hardware, operating system, programming, processing, etc.