

MHP/RT: Model Human Processor with Real Time Constraints

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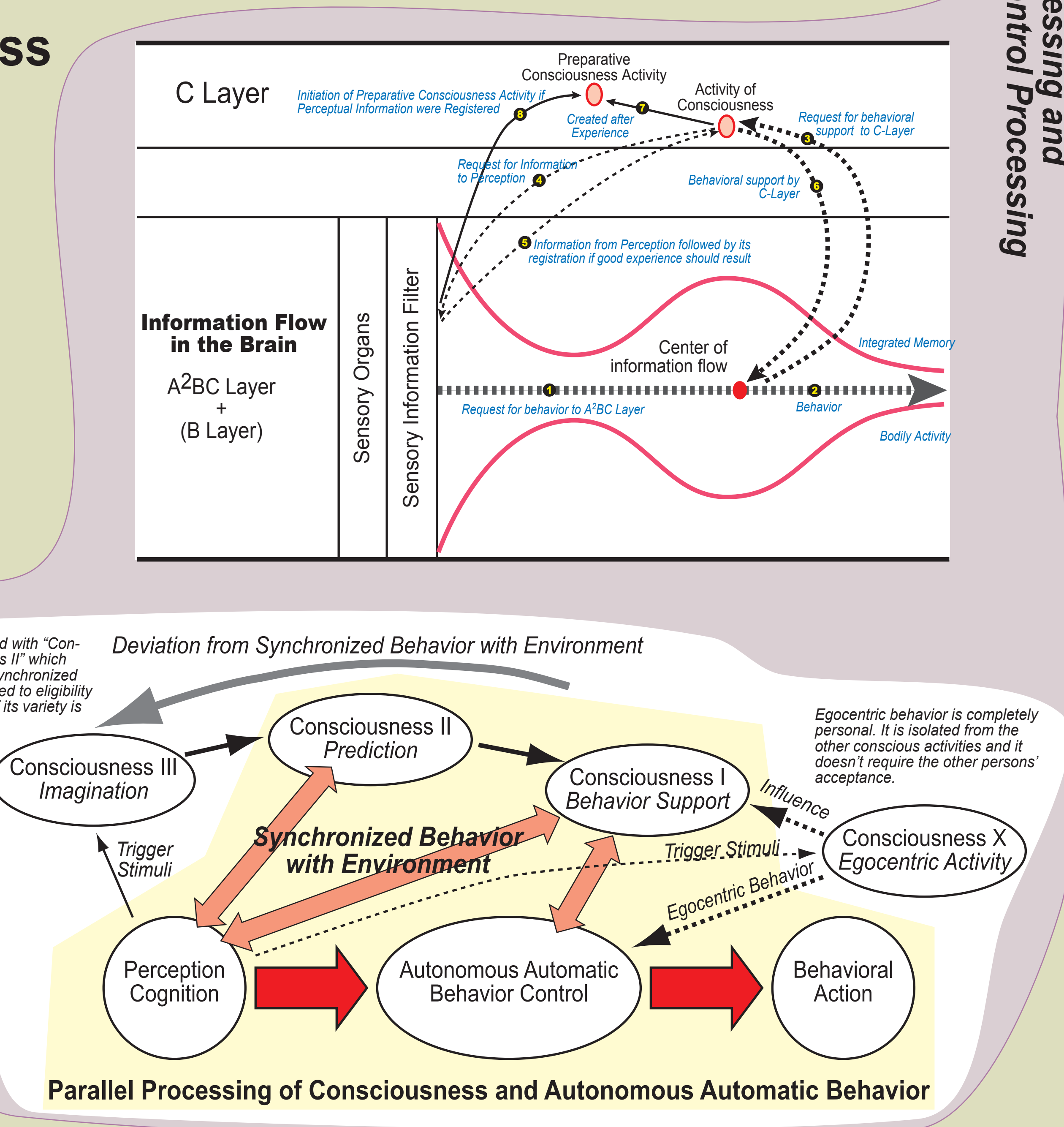
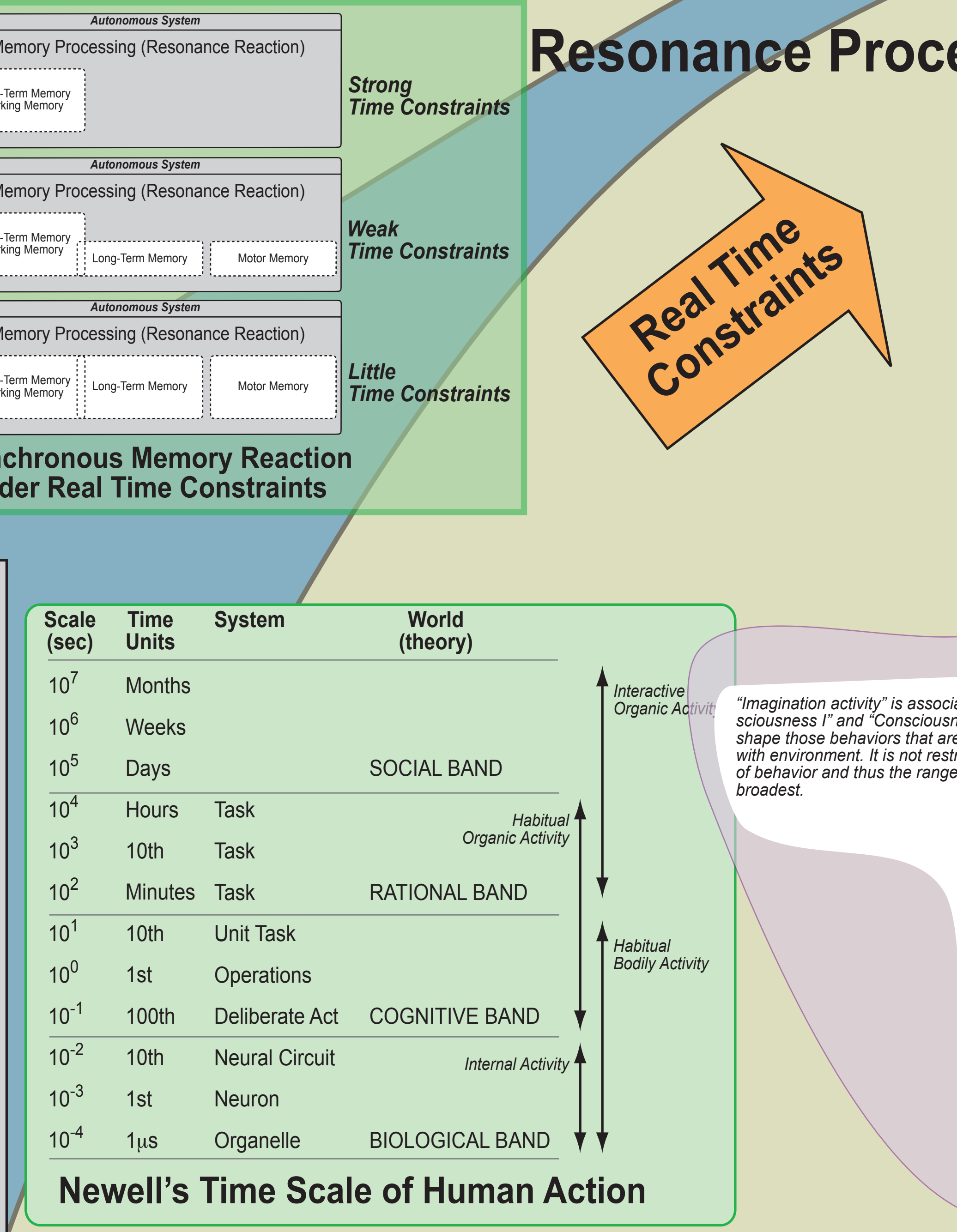
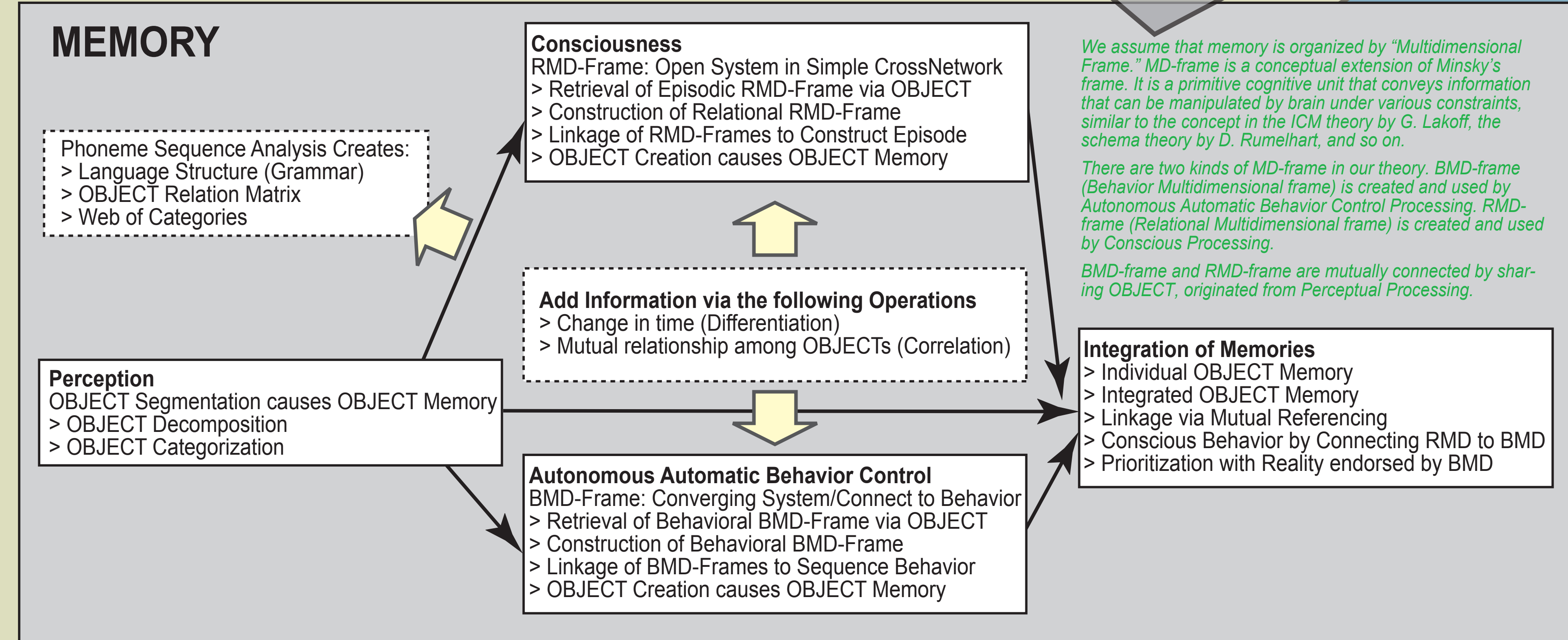
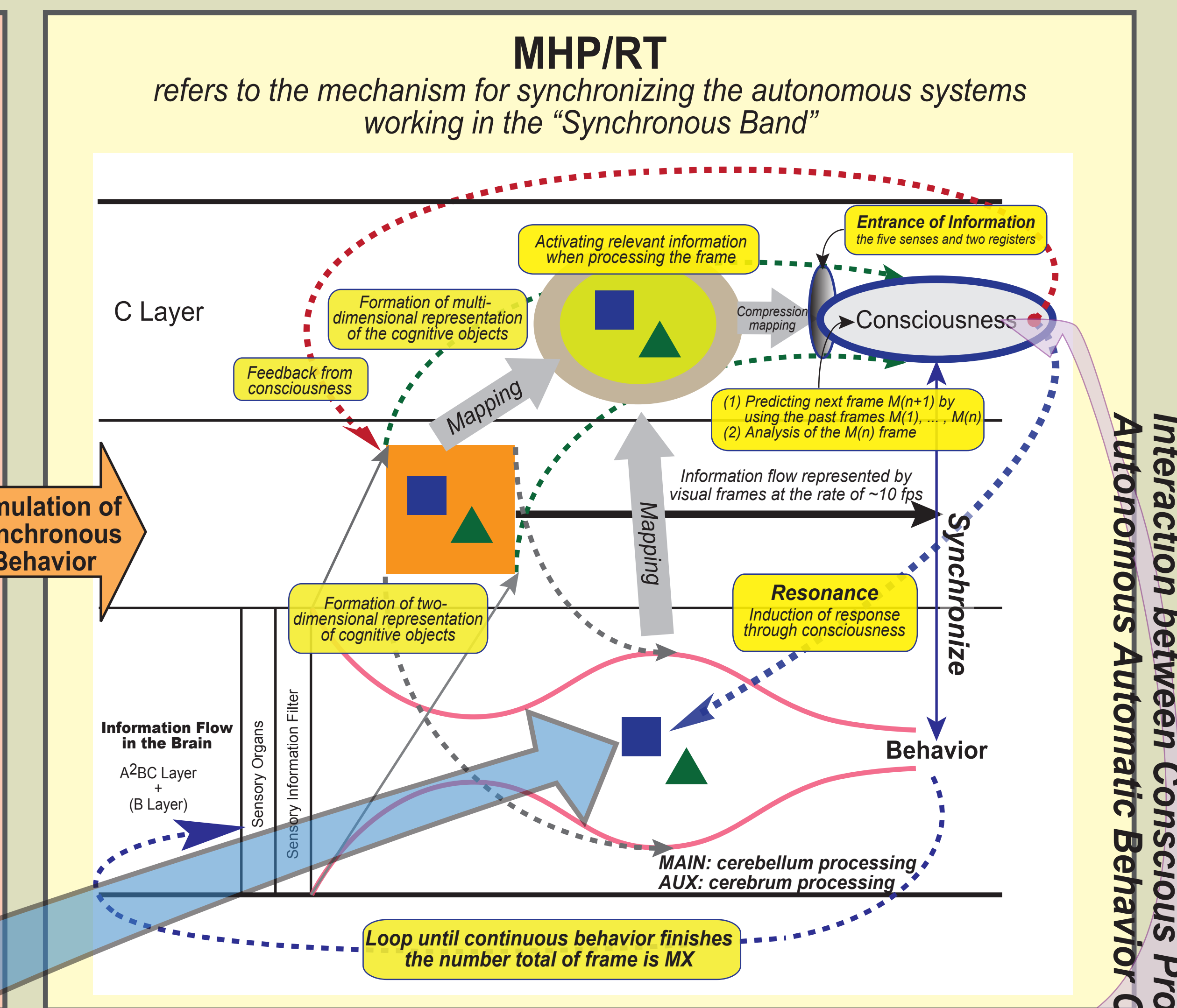
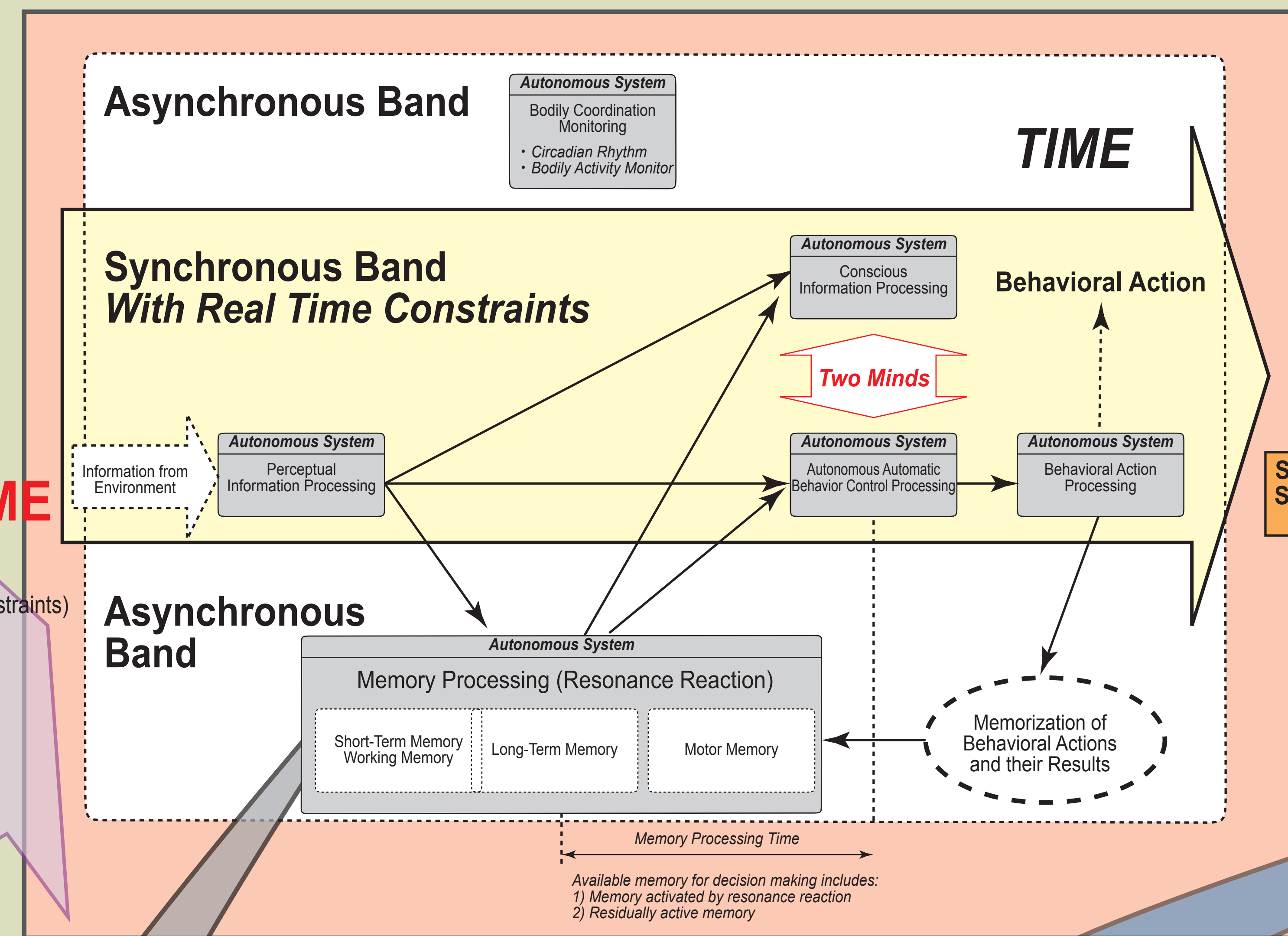
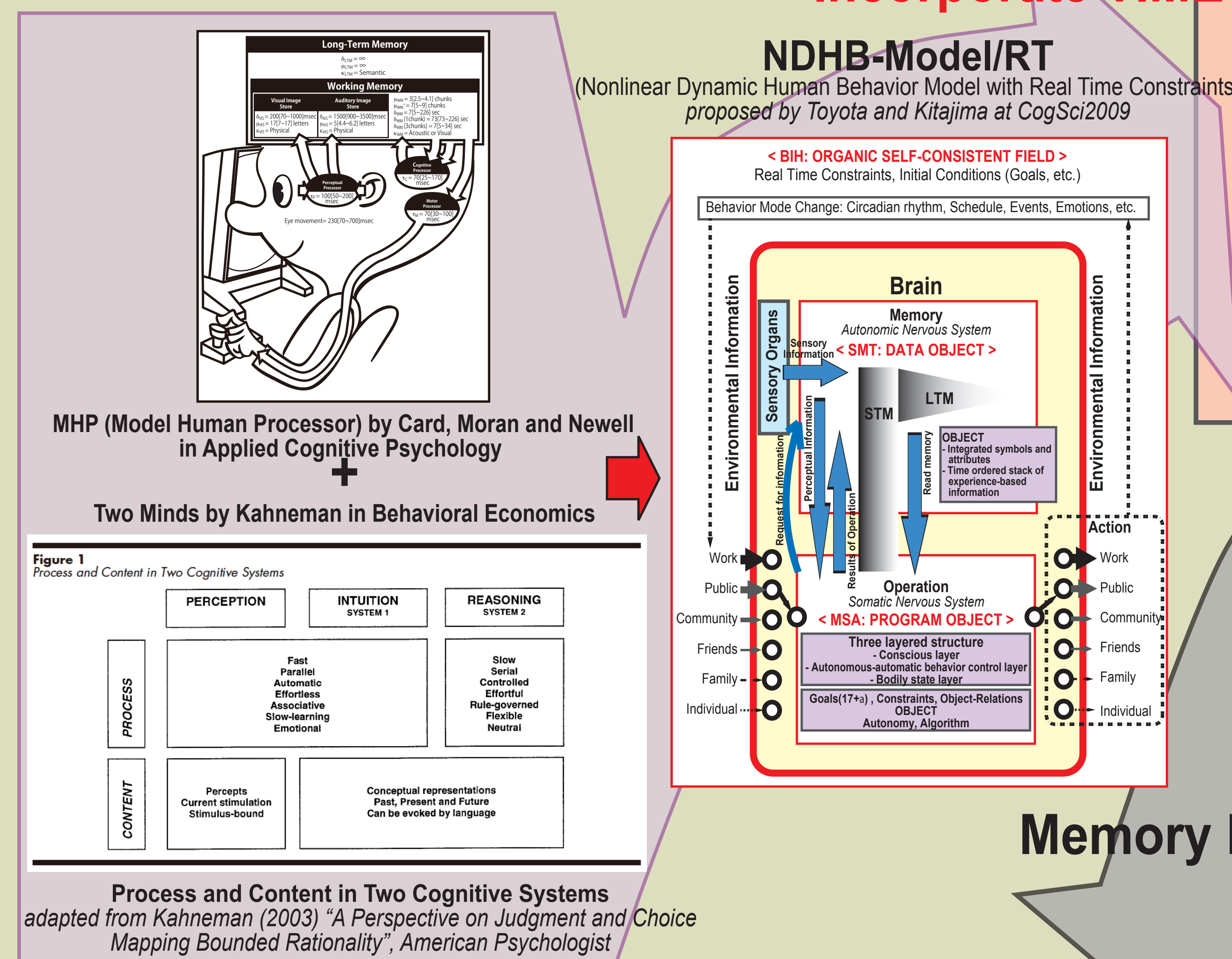
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URL <http://staff.aist.go.jp/kitajima.muneo/organic-self-consistent-field-theory/index.html>

Abstract We propose "Model Human Processor with Real Time Constraints" as a simulation model of human behavior selection. It stems on the successful simulation model of human information processing, Model Human Processor (Card, Moran, and Newell, 1983), and extends it by incorporating three theories, Maximum Satisfaction Architecture (MSA, presented at CogSci2007), Structured Meme Theory (SMT, presented at CogSci2008), and Brain Information Hydrodynamics (BIH, presented at CogSci2008). MSA, SMT and BIH deal with coordination of behavioral goals, utilization of long-term memory that works as an autonomous system, and a mechanism for synchronizing individual with environment, respectively. MHP/RT works as follows: 1) inputs information from environment and individual, 2) MHP/RT builds a cognitive frame in working memory, 3) resonates it with autonomous long-term memory, 4) maps the resonance on consciousness to form reduced representation of the input information, 5) predicts future cognitive frames to coordinate input and working memory.

References

- [1] Kitajima, M., Toyota, M., & Shimada, H. (2008). Model Brain: Brain Information Hydrodynamics. Proceedings of the 30th Annual Meeting of the Cognitive Science Society, 1453.
- [2] Toyota, M., Kitajima, M., & Shimada, H. (2008). Structured Meme Theory: How Is Informational Inheritance Maintained? Proceedings of the 30th Annual Meeting of the Cognitive Science Society, 2288.
- [3] Kitajima, M., Shimada, H., & Toyota, M. (2007). MSA:Maximum Satisfaction Architecture: A Basis for Designing Intelligent Autonomous Agents on WEB 2.0. Proceedings of the 29th Annual Meeting of the Cognitive Science Society, 1790.



Newell's Time Scale of Human Action

Scale (sec)	Time Units	System	World (theory)
10^7	Months		
10^6	Weeks		
10^5	Days		SOCIAL BAND
10^4	Hours	Task	
10^3	10th	Task	
10^2	Minutes	Task	RATIONAL BAND
10^1	10th	Unit Task	
10^0	1st	Operations	
10^{-1}	100th	Deliberate Act	COGNITIVE BAND
10^{-2}	10th	Neural Circuit	
10^{-3}	1st	Neuron	
10^{-4}	1 μ s	Organelle	BIOLOGICAL BAND

Interactive Organic Activity
Habitual Organic Activity
Habitual Bodily Activity
Internal Activity