

Friday, 1<sup>st</sup> December 2017 - 11 a.m**Yves FREGNAC**Invited by: Yehezkel BEN-ARI*UNIC - Unité de neuroscience, information et complexité  
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## Big data et la simulation numérique du cerveau : une stratégie d'avenir ou une bulle économique de promesses ?

New technologies in neuroscience generate reams of data at an exponentially increasing rate, spurring the design of very-large-scale data-mining initiatives. Several supranational ventures are contemplating the possibility of achieving, within the next decade(s), full simulation of the human brain.

Question here the scientific and strategic underpinnings of the runaway enthusiasm for industrial-scale projects at the interface between “wet” (biology) and “hard” (physics, microelectronics and computer science) sciences. Rather than presenting the achievements and hopes fueled by big-data-driven strategies - already covered in depth in special issues of leading journals—I focus on three major issues: (i) Is the industrialization of neuroscience the soundest way to achieve substantial progress in knowledge about the brain? (ii) Do we have a safe “roadmap,” based on a scientific consensus? (iii) Do these large-scale approaches guarantee that we will reach a better understanding of the brain?

This “opinion” paper emphasizes the contrast between the accelerating technological development and the relative lack of progress in conceptual and theoretical understanding in brain sciences. It underlines the risks of creating a scientific bubble driven by economic and political promises at the expense of more incremental approaches in fundamental research, based on a diversity of roadmaps and theory-driven hypotheses. I conclude that we need to identify current bottlenecks with appropriate accuracy and develop new interdisciplinary tools and strategies to tackle the complexity of brain and mind processes.

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