

Artificial Knowingness as an Investigative Tool Andy Gracie (hostprods)

Emergence is simply defined as the process of formation of a complex pattern from simpler base elements and rules, patterns not created by any single event. In such a situation there is nothing that commands the system to form a pattern, but instead the interactions of each part to its immediate surroundings causes a complex process to unfold. It follows that emergent behaviours are more than just the sum of their parts as the interaction of these parts rather than simple coexistence is vital. Emergent behaviours can be found in many natural phenomena, from the physical in the formation of galaxies and weather systems to the biological domain in ant colonies and the interactions of cells. In fact there is much speculation that consciousness and life itself are emergent properties of a network of many interacting neurons and complex molecules, respectively.

“As the information and biological sciences continue to converge, the desire to access, decode and apply the latent information within natural systems has grown to an unprecedented level”, states Jeremy Rifkin in ‘The Biotech Century’. As a species we are currently armed to delve deeply into the physical function and make up of life itself and even to begin to alter it to our own ends, or for scientific experimentation alone. As we deconstruct the DNA molecule and dissect the cell we begin to get an insight into where the information of life is stored and how it is encoded. But how much does this actually tell us about intelligence? It is interesting to consider various biomedical and computing technologies as a counterpoint to natural systems and as a possible tool for developing a deeper understanding of or empathy with them. To begin to look more closely into where and what exactly intelligence is.

On a fundamental level we can examine the distributed nature of information in biological systems through natural mechanisms such as stigmergy and collective intelligence and the resulting emergent structures. If such processes can be seen as natural intelligence, ‘unconscious information processing’ or an ‘ability to compute and make decisions’, then we can see modern computational technologies such as Artificial Intelligence and robotics as compatible.

The application of artistic research to ideas surrounding the cultural notion of a ‘living system’ and thinking how these relate to a co-evolution of intelligent machines makes possible an objective and profound exploration of intelligence, self-organisation, symbiosis and memetics. We are accustomed to machines and artificial sensors as mediated senses and ‘seeing through the machine’ has important implications for what and how we see, especially in regard to nature.

Taking artificially intelligent entities as our proxy observers of nature and its inherent systems of information and intelligence we may, through studying emergent behaviours, reveal much about the understanding and interpretation of information from living systems. From a conceptual standpoint we can examine the possibility of data sharing and symbiosis between the natural and the technological and raise questions related to how living systems coexist with technology and whether sustaining such bioartificial ecosystems is possible or even desirable.