



Kuai Shen
The Swarm Raiders & the Army Ant Syndrome

„Pedestrian motion might be treated like the flow of a fluid. But if so, it was a fluid with a mind of its own, a fluid that could defy Newton’s laws by stopping dead or breaking into a run.“

- Philip Ball -

Imagine an organic faucet embedded in a tree, it opens and just like water, particles of six-legged soldiers with mammoth pointy sharp mandibles burst out, running, stampeding, obliterating and destroying everything that stands in its way, always drawing a different chaotic pattern across the rainforest soil. Chaotically, they vandalize the jungle, spraying their pheromones on the organic canvas. And then after a while, after the randomly driven army force has been fully discharged from this virtual faucet embedded in a tree, that which originally appeared to be chaos diminishes, and the flanks of frenzy soldiers start orderly streaming in one direction, fractally forward, creating connections and bifurcations, fractal highways that start making sense.

Summoned by mother nature, the army ants emerge, directed by pheromone trails laid by nestmates, which excite their antennas and incite their little brains to make the decision which of the available paths to follow: a fractal is formed. Like roots that extend from the underground to the surface, the form of a trunk appears, then branches and twigs...the form of a tree, a rhizome, a connected superorganism of army ants is on the march, swarming in the deep rainforest. They are driven not by randomness, madness or destiny, but powered by the need to feed millions of mouths.

The system of advance and retreat, of assembling and deconstructing, used by the army ants in the tropical rainforests, is a system that listens to itself in order to know when to switch from one state to the other. A mimetic system design to create chaos and order. The ants in the swarm are excited and attracted by the strong chemical signals of their immediate neighbors. As they run forward through the pheromone tunnel of sensations, every ant is influenced by the accompanying horde running with them. Imagine the civil disorder phenomena in our society known as a riot, where all the participating civilians get infected with violence and an irrational appetite for destruction. In the case of the swarm raiders, a negative feedback loop has to emit the message that there is no more need to waste energies in this direction, cooling the system, transforming the excited aggressive chaos back into order, and the unpredictable ‚seek and destroy‘ fractal march of the barbaric ant legion reconstructs itself, now in another direction.

The swarm raiders are driven by an irrational behavior stimulated by peer pressure, the local influence of your neighbor to do what he or she is doing: from the banal dance and drink because all your friends are doing it and having a great time, to the simple following of the crowd to the concert or the football stadium without questioning if that is the right direction. The swarm raiders are a very privileged species of ants that suffer, to their advantage if we may say so, from the army ant syndrome. There are 3 characteristics that define the army ant syndrome: nomadic nesting behavior, massive predation and a specialized queen caste able to lay more than 100.000 eggs in a week. A syndrome of multi-level proportions and multidimensional characteristics, for those under the influence of the syndrome are carried away and lose their sense of individuality.

What does a water molecule, a bird, a fish and an ant have in common? Just as water begins to boil, just like a bird flock suddenly changes its flight direction maintaining its formation, or a fish school swims together to deceive and avoid predators, an ant swarm can change abruptly its predatory direction due to organic algorithms present in their social collectivity. The collective intelligence in a swarm emerges unpredictably from the actions of local neighbors inside a negative feedback system. Every single unit can perform terribly alone, but together, just like neurons, the units can sum up and achieve greater goals. Every ant possesses a simple set of rules, just like a bit is defined by 0 and 1, a raiding army ant can use its minimal knowledge to recognize and act in two ways: run back home or forage for food. Add millions of simple units with basic knowledge like this in a system, where close and constant contact is made available, and you end up having a self-organized entity.

What can we learn from the army ant syndrome behavior of massive predation? What does it mean to realize that we are also swarm raiders in our daily lives out in the public sphere? These ants possess tiny brains with limited decision and process capacity, nevertheless they don’t need to plan to effectively function as a collective. The principal feature of the army ant syndrome is the lack of a director or leader, for the army ants function by pure means of local interaction. And so the collective intelligence emerges. Can we rely on their system and communication network to adapt their social model for the benefit of our society?

Kuai Shen is an audiovisual naturalist and ant lover. His artistic research was published in 2010 by the University of Colorado in the book "Biologically-Inspired Computing for the Arts", in the Leonardo MIT Journal for the Siggraph 2011, as well as in the Acoustic Space Journal for the 5th Renew Media Art Histories conference in 2013. He has been selected among the best contemporary artists in the recent book of William Myers entitled, "Bio Art: Altered Realities", published by Thames & Hudson London in 2015. In 2013 he was awarded the Edith-Russ-Haus Medienkunstpreis and also received an honorary mention in hybrid art from the Prix Ars Electronica for „Oh!m!gas“. In 2014 he was honoured with the Cynetart Förderpreis des Sächsischen Kunstministerium for his work "Playing with ants & other insects".

Photo: Kuai Shen – Army Ants, Ecuador. Courtesy of the artist.