

O P E N B O O K

# Stinging the Dinosaurs

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**T**he ants, bees, wasps, and termites are among the most socially advanced nonhuman organisms of which we have knowledge. In biomass and impact on ecosystems, their colonies have been dominant ele-

**Extraterrestrial** visitors to Earth a million years ago would have found a planet teeming with 1,000 trillion social creatures, from 20,000 species—mostly insects. So report Bert Hölldobler and Edward O. Wilson, Pellegrino University Professor emeritus, in *The Superorganism: The Beauty, Elegance, and Strangeness of Insect Societies* (W.W. Norton, \$65). The social insects merit further study today, the authors say, for many reasons.

shed light on how neurons of the brain might interact in the creation of mind. ...The study of ants, President Lowell, of Harvard University, said when he bestowed an honorary degree on the great myrmecologist William Morton Wheeler in the 1920s, has demonstrated that these insects, “like human beings, can create civilizations without the use of reason.”

The superorganisms are the clearest window through which scientists can witness the emergence of one level of biological organization from another. This is important, because almost all of modern biology consists of a process of reduction of complex systems followed by synthesis.

**Weaver ants (*Oecophylla smaragdina*) cooperate as they construct their leaf-tent nests.**

During reductive research, the system is broken down into its constituent parts and processes. When they are well enough

known, the parts and processes can be pieced back together and their newly understood properties used to explain the emergent properties of the complex system. Synthesis is in most cases far harder than reduction...[Biologists are] still a long way from understanding fully how molecules and organelles are assembled, arranged, and activated to create a complete living cell...[and] from mastering the many complex ways in which species interact to create the higher-level patterns.

Social insects, in contrast, offer a far more accessible connection between two levels of biological organization...Both of these levels, organism and colony, can be easily viewed and experimentally manipulated. As we will show...it is now possible to press far ahead in this fundamental enterprise of biology.

David Sanford says, that now “he has an appetite and a curiosity and a fire for new stuff.”)

Cello and piano may seem a natural pairing, but Haimovitz has titled his new album *Odd Couple*. Because the piano belongs to the percussion family and the cello to the strings, he claims, their sound qualities, or timbres, don't match. Pianos also have fixed tunings, whereas a cellist can slide or vibrate notes to produce a more expressive intonation. But the biggest problem is that the piano's massive sound can easily overwhelm the cello. This wasn't as much a challenge for Bach and Beethoven—earlier keyboard instruments were softer—but in the recording studio in Montreal (where Haimovitz teaches cello at McGill University), he and Woolf (herself a composer) had to tinker constantly with the sound controls to pick up the right balance.

All four pieces on *Odd Couple* are by contemporary composers and take different approaches to combining the two instruments. In *Cantos for Slava*, by Augusta Read Thomas, BF '91, JF '94, Haimovitz and his pianist, Geoffrey Bursleson, both plucked their strings, Haimovitz on the cello and Bursleson inside the piano. Achieving balance in Sanford's *22 Part 1*, which Haimovitz likened to a “rock 'n' roll boxing ring,” required furious bowing on the cello and digital amplification. The Cello Sonata, op. 6, by Samuel Barber, D.Mus. '59, and the Sonata for Cello and Piano, by Elliott Carter '30, D.Mus. '70, complete the disc; Haimovitz calls the Carter “one of the most successful works in the genre, in the richness of each individual part and how the two come together” after each instrument begins in “its own metric world.” The music on *Odd Couple*, he says, is “maximalist”—dense and energetic, as opposed to the current trend among composers toward more minimalist scores.

Sharing new music is as important to Haimovitz as recording it. While recording for Deutsche Grammophon, he felt disconnected from the people buying his albums. “My work was *in* the session, and then essentially I would turn my back,” he says. Running his own independent label, Oxingale ([www.oxingale.com](http://www.oxingale.com)), and selling CDs at his concerts has changed that. He tours from Thursday to Sunday nearly every week, and took his album *Anthem* (a celebration of American composers that begins with a version of Jimi Hendrix's



FROM THE BOOK

ments of most of the land habitats for at least 50 million years. Social insect species existed for more than an equivalent span of time previously, but were relatively much less common. Some of the ants, in particular, were similar to those living today. It gives pleasure to think that they stung or sprayed formic acid on many a dinosaur that carelessly trampled their nests.

The modern insect societies have a vast amount to teach us today. They show how it is possible to “speak” in complex messages with pheromones. And they illustrate...how the division of labor can be crafted with flexible behavior programs to achieve an optimal efficiency of a working group. Their networks of cooperating individuals have suggested new designs in computers and