

A DARWINIAN DA



A large flock of birds, likely starlings, is captured in mid-flight against a clear, light blue sky. The birds are arranged in a dense, circular formation, with many more birds visible in the lower-left corner, suggesting a larger flock extending beyond the frame. The birds are small, dark silhouettes, and their wings are spread, creating a sense of movement and synchronization.

NCE

FALCONS AND STARLINGS
ENGAGE IN AN AGE-OLD AERIAL
BALLET, RISING AND DIVING IN
SPECTACULAR SYNCHRONY
ACROSS THE OPEN SKY

BY GRAINGER HUNT
PHOTOS BY NICK DUNLOP

Driving along the weedy edge of a dairy meadow on a clear winter afternoon, we notice a cloud of quick gray motion, a presence in the forefront, then rapid withdrawal. A dazzling cloud, swirling, pulsating, drawing together to the thinnest of waists, then wildly twisting in pulses of enlargement and diminution, a fluid choreography of funnels, ribbons, and hourglasses, spills and mixing, ever in motion. Dense in one moment, diffuse in the next.

How beautiful! How unlikely!

We pull over to examine the situation more intently, to make sense of it, to make sense of them. For they are birds—hundreds of them. No, thousands, and in exquisite coordination, as if orchestrated, as if ordered by an unseen, absurdly creative hand. They are starlings!

Other travelers have stopped to view the show, and it continues amid hoots and shouts of exclamation, as if an adroit magician were confounding his audience with simultaneous wonderment and bafflement. What in the world? And look! There's another such cloud in the distance, equally marvelous. Has nature gone bonkers?

Darwin may well have puzzled over the same phenomenon, European Starlings being familiar to him as a part of the English countryside. Indeed, he may have even known the secret of the cloud and its not-so-obvious ingredient, its key player, the caller of the dance. For alongside each dynamic cloud is a Peregrine Falcon.

And how might Darwin's mind have processed what he saw? He would surely have rejected the idea of intentionality by the whole of the cloud itself. He would have spurned, in the maturity of his vision, the idea that starlings would somehow be cooperating in the production of a spectacle. Being a reductionist, he would simply have recalled the core explanatory concept: that the strategy of each starling is to excel in lifetime reproduction, and essential to that end is the business of surviving from moment to moment for as long as possible. Here is a peregrine, intent upon a meal, and the focus of each desperate starling is avoidance.

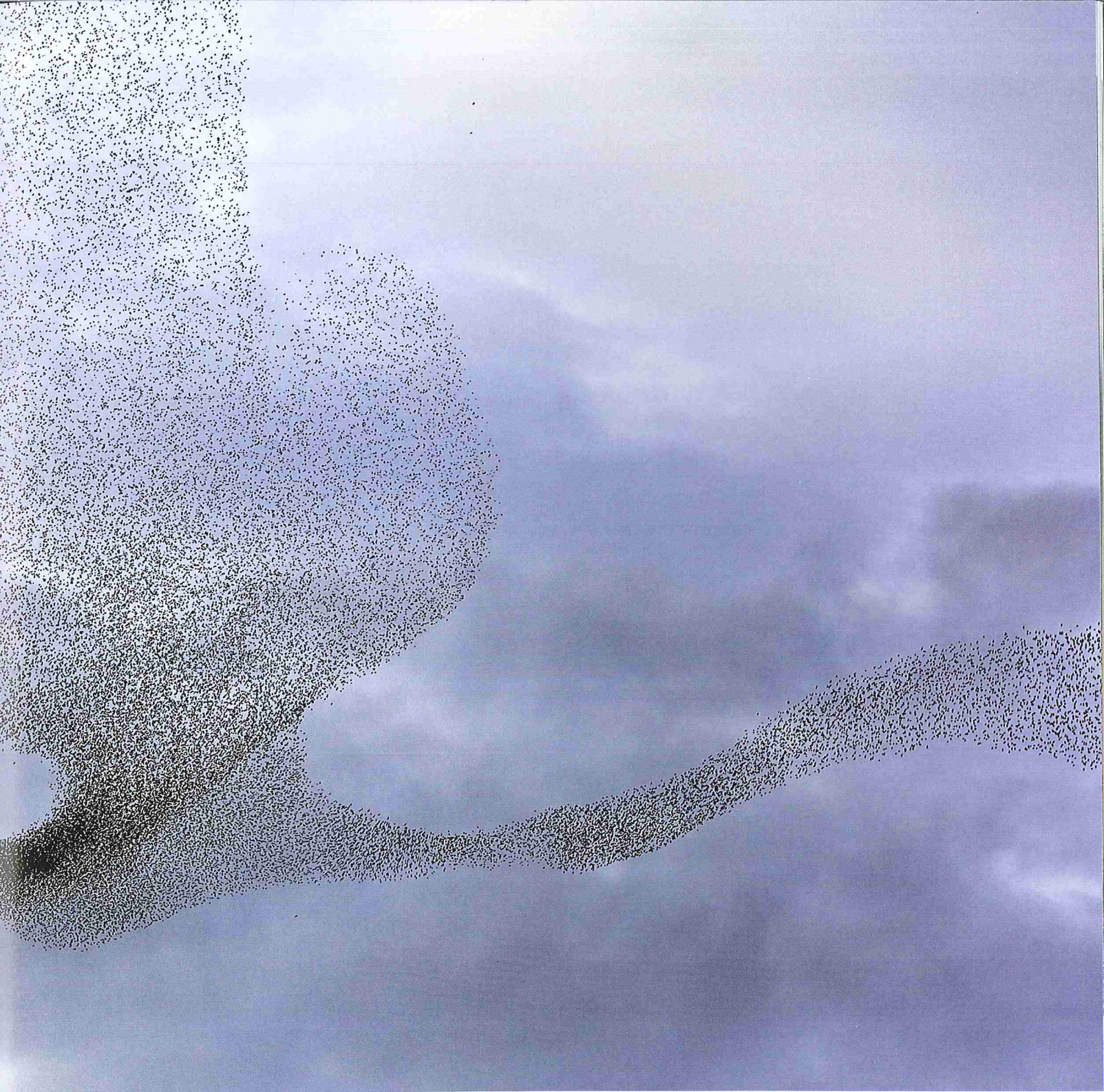
The wondrous cloud is thus secondary—an extraneous property, emerging from independent attempts by each individual, within the multitude of self-interested starlings, to escape the falcon—and how better than by getting in the middle of the flock and staying there until the peregrine leaves? At each point during a peregrine attack, there are safe places to be, and there are unsafe ones, and so each starling strives to place others between itself and the falcon. Watching the cloud more intently with these thoughts in mind, the proof of the explanation becomes clear. The whole

What are we to make of the pulsating, other-worldly spectacle of a massive starling flock, moving amoebalike across the open skies? A Peregrine Falcon or other winged predator is almost always involved, as the thousands of individual flock members fight to evade capture.

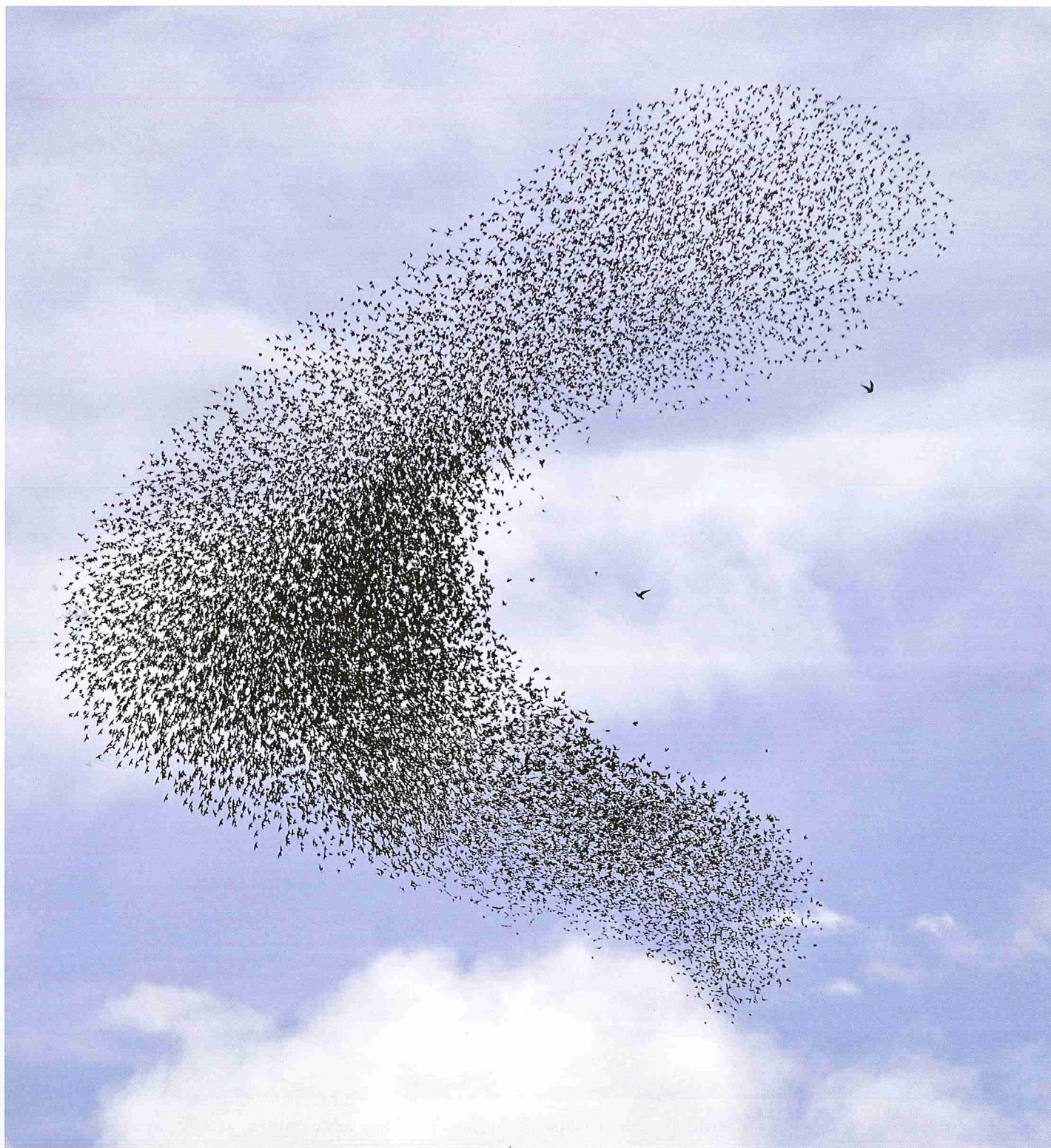


display is a grand interaction of predator and prey, the Serengeti in three dimensions, like flashing schools of anchovy and their tuna pursuers.

After a while the peregrine withdraws, empty-handed this time, and the watcher wonders at the reluctance of the starlings to disperse, to settle, now that the monster has gone away. But one realizes the dilemma faced by any individual starling that opts to leave the flock and isolate itself in a gulf of air, so vulnerable to any falcon that might at that moment be soaring invisibly high in the sun. And so the starling cloud remains intact for a time, until it eventually drifts near enough to the trees that a few defect, and



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This adult Peregrine Falcon (on facing page) looks curiously docile at rest above its nest cliff, but in flight it is the terror of the skies. Above, a starling flock bends into a bowlike shape to avoid a peregrine attack.

a few more, and then a sudden noisy rush to the safety of the branches. Amazing!

The frequent failure of the predator to catch a starling, in what seems so easy a situation, is a bit of a mystery. Would not a peregrine swiftly plundering the edges of a flock, or dashing headlong

within it, quite easily snag an errant bird? And yet there does not seem to be one. Starlings, we learn, are swift and agile flyers, not easy pickings, all having descended from winners in the acutely discriminating contest of survival and reproduction. Is this not a recipe for fine-tuning? Look at how each performs within the near-perfect fluidity of the formation, and with never the tangling of wings.

Our peregrine, meanwhile, is well fed, as peregrines typically are, and apparently ambivalent about success. Perhaps there is also

risk when one tries too hard. Bodily collisions with tight groups of starlings are probably unavoidable when the peregrine is traveling near the limits of its capability, and starling bodies impacting the peregrine's head or the leading edge of its wing may carry the possibility of injury. Even remote risk must be balanced with need in a species whose potential longevity is nearly 20 years. And so the peregrine attacks the flock gingerly, and in apparent moderation of its true ability to catch a starling.

Scientists have suggested a wide variety of reasons for the wonderful patterns formed by bird flocks and schools of fish in the presence of predators. Some explanations focus on the effectiveness of certain flock shapes and their dynamics in reducing the predator's overall chance of success. But for such shapes to be purposeful implies that flocks have a mind of their own, which, of course, they do not. The simpler explanation involving individual self-interest explains all the facts.

Starlings do normally associate in flocks, even in the absence of nearby predators, and it is certain that each individual finds advantages in such behavior. Starlings in the company of others, for example, have more time to eat, there being many eyes watching for danger. With so much collective vigilance, an approaching raptor is detected sooner. Even one companion would help, and we must imagine that the large groups are simply amplifications of that advantage. On the other hand, sharing food with a horde of other starlings carries the downside of intense competition and depletion. As always, everything biological is a compromise of benefit and cost.

The starling dance is still not as well known in America as one might expect, and indeed it has a spotty history. Starlings arrived in New York from Europe in the 1890s, but it took decades for them to become abundant coast to coast. By the middle of the 20th century, when starling populations might have reached their zenith, Peregrine Falcons had begun their steep decline from the effects of DDT on their reproduction, and outright mortality from another pesticide, dieldrin. It was not until the 1990s that peregrine populations fully rebounded, so the starling show might thus have been unknown or poorly known to our parents.

Nowadays, the two birds are widespread and frequently seen, and it is a fine adventure to view them in the height and drama of their interaction. Look for starlings in the cooler months near dairies, feedlots, vineyards, or anywhere agricultural leftovers are



present. When you find them in their multitudes—critical mass, so to speak—a Peregrine Falcon is probably close by, or perhaps a Merlin, Prairie Falcon, Cooper's Hawk, or even a Red-tailed Hawk. All are capable of invoking the cloud response, though none so spectacularly as a peregrine. Get comfortable, lean back with your binoculars, and look for the predator near the darkest areas where individuals are packed the tightest. Look closely, just outside the margins of the cloud, and let nature reveal itself. ♦

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