Ant

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Contents

Ants (Formicae) on an anthill, a miniature from a French bestiary of c. 1450.

1 Introduction

It is extraordinarily difficult to avoid using grandiose adjectives in the descriptio
of ants.

Ants command a respect from their fans out of all proportion to the insects' siz
Ants, they affirm, are the '-est' insects: the cleverest, most organized, hardes
working, most numerous, most fecund, most dominant; they are older tha
humans, more bellicose, more cooperative, more communicative. Frequently thes
comparisons border on the bizarre. A children's web site asserts: 'Ant brains ar
largest amongst insects . . . It has been estimated that an ant's brain may have th
same processing power as a Macintosh II computer.'[1]

At least, all this is what myrmecologists (those who study ants) would have u
believe. Though their precise claims have changed over time, western students o
ants always seem to have made hyperbolic assertions about them.

The eighteenth century natural philosopher Réaumur started at a basic level i
his catalogue of the extraordinary qualities of ants: 'we have for them none o
those aversions that are frequently entertained towards so many other insects'
Our dispassionate attitude towards them compared to, say, cockroaches, signa
their human status; their existence is parallel with our own. Unlike fleas, they hav
no particular dependence upon us, and we have no need for them as we do fo
bees. This independent existence of ants has, at various times, been a source bot
of wonder and of horror. Thomas Mouffet, a sixteenth-century physician, noted tha
the ants

> . . . are so exemplary . . . it is no wonder that Plato, Phaedone, hath
> determined that they who without the help of philosophy have lead a civill
> life by custom or from their own diligence, they had their souls from Ants,
> and when they die they are turned to ants again.[3]

Here, the ants' lack of reliance upon philosophy marks out the alternative ye
equivalent nature of their civic lives: a parallel so wondrous that, according t
Pliny, they are the only creatures besides us that bury their dead with funeral rite
More contemporary analogue-myths assert with equal confidence that ants,
magnified to the size of sheep, would rule the earth, and that in the event of

nuclear holocaust they would outlast humans.

In between the eras of Plato and NATO, observers have concocted a canon o astounding facts and figures concerning the numbers of ants, their distributio their reproduction and modes of life. They are habitually scaled up to 'equate' t human terms, upon which basis their nests are compared to the pyramids, or to th Great Wall of China, and their movement with that of a speeding train. They hav recently been enumerated at ten thousand trillion; collectively they are asserted t weigh as much as the earth's human population. E. O. Wilson, the most renowne living myrmecologist, claims that the behaviour of ants is scientifically mor interesting than that of humans' bestial cousin and the psychologists' curren favourite, the chimp. The reason for this, he writes, is that ants can be studied fo the meaning of their social interaction, whereas the most impressively traine chimp is only performing individual tricks, devoid of any social or ecologic import.[4]

The remainder of Ant explores this process of myth-making and suggests som reasons for the precise images and values that have been attached to ants a various times and in various places. The rest of this chapter, however, is devoted t a summary of the contemporary scientific understanding of ants: the stories tha are told by myrmecologists today.[5]

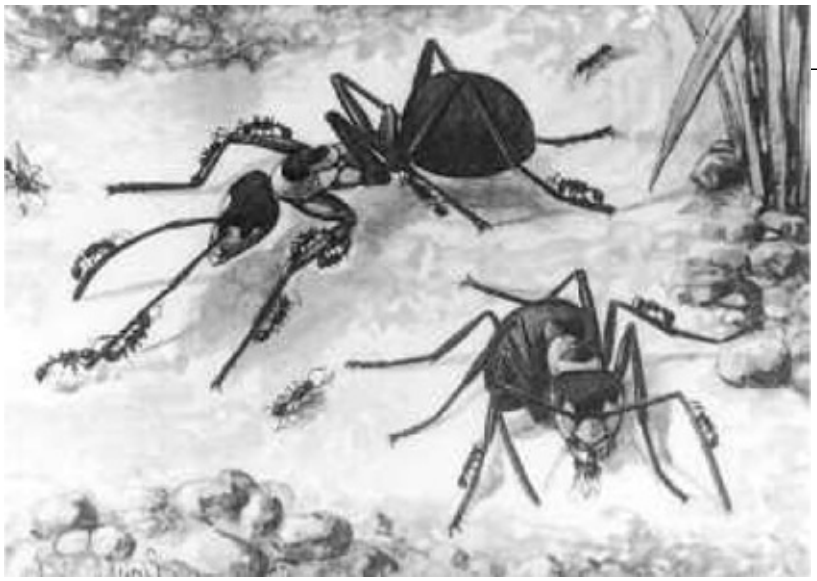
The animal kingdom is divided into successively smaller categories, which as the decrease in size reflect a greater degree of similarity and presumed evolutionar connection between their members. Phyla are the largest groups, which are the successively divided into classes, orders, families, genera, and finally into specie Insects are one class of the phylum Arthropoda. (Non-insectan arthropods includ crustaceans and spiders.) The class Insecta is made up of various orders, includin Coleoptera (beetles) and Lepidoptera (butterflies and moths). The orde Hymenoptera contains ants, as well as their evolutionary cousins, the bees an wasps. Termites, although often referred to as 'white ants' have long bee assigned to a different order, the Isoptera, which they share with their less loveab relations, cockroaches. Within the order Hymenoptera, one family – Formicidae contains all the true ants. Ants are easy to recognize compared with many othe insects. All are the same basic shape and have a characteristic kink in their eve busy antennae. The Formicidae are split down into around three hundred genera some of which have informal descriptive names such as sugar ants, bulldog ants o meat ants. Individual species vary in size between 0.7 millimetres and centimetres in length.

At the time of writing, the latest count of ant species was 11,006. Although th represents a tiny proportion of known insect species (about 750,000, of which mos are beetles), the combined weight of all living ants has been estimated t constitute half the mass of all extant insects. This figure, out of all proportion t the number of insect species, shows the success of ants in exploiting a variety o habitats around the world: just about everywhere apart from the polar regions.

Frontal view of worker ant (Paratrechina sp.) showing the antennal kink characteristic of all modern ants.

Virtually all of the ants one sees are infertile female workers, engaged i functions such as foraging, nest maintenance or defence, and tending the youn Inside the nest there are also sexual forms, both male and female. At some poin these ants will fly up into the air and mate; these are the swarms of winged an that are commonly seen in late summer. Most will be eaten by birds, and the male have no function at all in the colony beyond this brief task of fertilization. A fe fecundated females, however, return to earth to found a new colony. Each will she her wings, digest the muscles that powered her short flight, and lay her first batc of eggs. She may have to leave the young from time to time in order to search fo food; if need be, she may even consume some of the eggs or larvae in order t sustain herself. The larvae pupate, and emerge in the adult form. Once raised, th first generation of workers can take over the care of subsequent broods, leavin the queen to the business of egg-laying for the remainder of her life.

An entire colony of Brachymyrmex (top right, behind antenna) would fit into the head of the large Bornean carpenter ant filling most of this scanning electron micrograph.

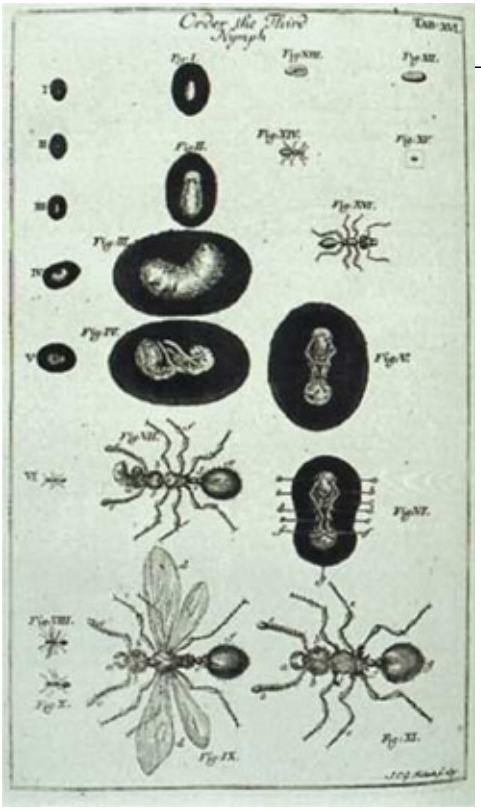


Dramatic size differences between ants can also be observed in real life. Here, in Auguste Forel's The Social World of the Ants Compared with That of Man (1928), seemingly unmatched species are locked in battle.

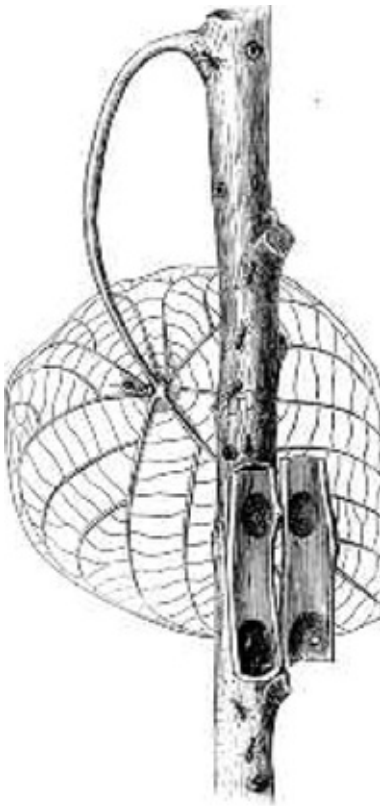
An alate (winged) queen sets off to found her colony, accompanied by tiny workers from the nest where she was born clinging to her legs.

As the nest matures, the number of workers increases, their labour become divided and the nest grows still more. When it has grown to a sufficient size, th queen will produce sexual forms ready for the next mating season. Sinc fertilization, she has been storing sperm and releasing them one or several at time with each egg produced. Now, she releases some unfertilized eggs, which w become the males. Sexual females are produced, like their infertile sisters, fro fertilized eggs. They are turned into a sexual form simply by being fed a differen diet. In almost all species, the colony will last as long as the queen is aliv generally between five and twenty years. When the queen dies, the colon gradually declines until the last worker dies out.

There are many variations on this basic life cycle. Some nests are founded b multiple queens, of which all but one may later be eliminated; some gradual branch out with new queens and workers to form satellite branches of the large 'supercolony'. Other nests may adopt supernumerary queens. Queens of som species take workers with them when they found a new nest; this process is know as swarming. In other species the queen is altogether incapable of raising tha critical first brood by herself. In this case, she may invade another nest on temporary or permanent basis, using its workers to raise her young alongside, instead of, their own.



A very early depiction of the ant’s life-cycle in John Swammerdam’s The Book of Nature, or, The History of Insects (1758).



Ants’ nests are found in all kinds of places including inside plants, such as this Endospermum formicarum inhabited by a colony of Camponotus quadriceps in an illustration of 1910.

Army ants, found in the tropics, have no physical base to their colony at a They simply hang in a cluster overnight, forming a bivouac around their quee When it is time to hunt, the whole colony goes on the march, swarming across th ground and eating anything in its path, until night falls once again. These ant from several widely separated genera, are, however, in the minority. Most specie have a fixed base, a nest around which their existence revolves. At its centre ther is generally an enclosed dwelling constructed by the ants, the place to which a

the ants return at night and at the heart of which the queen shelters, producin
young. Just outside the nest, there is often an area known as the midden, which
the refuse heap of the colony. Extending all around this area is the territory of th
nest.

Ants often live in symbiosis with the plants they inhabit, offering them protection in return for shelter. Here a Papua New Guinean epiphyte is inhabited by Iridomyrmex ants, in an illustration of 1910.

The nest contains a number of different castes and ants in various stages
maturity. The workers perform a wide variety of tasks. The nurses tend the eggs
larvae and pupae. Many researchers have noted how they carry them off in time
of threat, or move them from one part of the nest to another over the course of th
day, in order to maintain them at the correct temperature as the nest warms an
then cools with the passage of the sun. They lick the young constantly, coatin
them with antiseptic chemicals that inhibit the growth of bacteria within the nest.

Ant hill belonging to wood ants. During the day, workers are busy maintaining the hill.

Meanwhile, maintenance workers gather up pieces of dirt and use them to men

or build the nest. Patrollers inspect the nest and its surroundings, checking th ants they encounter to see if they are foreigners. It seems that they also pick ou places to forage, and the routes to get there. Foragers, as their name implies, g out searching for food, or are recruited to exploit the food sources located by the nest-mates. They tend to follow trails made by their predecessors between the nes and food sources. Food is shared rapidly by the whole nest by mutua regurgitation, known as trophallaxis. Midden workers tend the refuse heap outsid the nest, and may move it from place to place. Soldiers protect the nest and ma also engage in aggressive behaviour, whether against other colonies of the sam or different species or against other insects altogether.

Keeping control of the colony's territory is essential, as it yields the foo necessary to maintain the population. As the colony grows, so it must extend it foraging territory. When the territories of adjacent colonies meet, battle occurs The colony's soldiers fight by stinging or spraying one another with poison, as we as by wrestling and chopping with their mandibles. A frequent choice of poiso spray is formic acid, which lends many species' nests their distinctive scent whe disturbed. This odour, reminiscent of urine, gives ants their Middle English name pismire. Ants often enter into conflict with other insects as well, especial termites. Some species will even raid another ants' nest, stealing its young fo food. An evolutionary arms race keeps the ecological balance between competin species; when ants are introduced into a new location they can wipe out nativ species unused to the battle tactics of the newcomers.

Ants can squirt formic acid to ward off threats, giving them their characteristic odour when disturbed. From Auguste Forel's Social World of the Ants Compared with That of Man (1928).

Trophallaxis is facilitated by a crop or ‘social stomach’ (L) from which ants can regurgitate food. From Auguste Forel, Social World of the Ants Compared with That of Man (1928).

According to some researchers, the nest itself may be regarded as goin through a process of maturation, as evidenced in its collective behaviou Following a ‘timid’ period after establishment, it may go through an aggressiv phase, seeking out conflict with its neighbours, probably in an effort to expan More mature colonies coexist more peacefully with nearby nests, keeping to the own foraging paths and avoiding confrontation.

Certain species of ant go beyond direct conflict for food; they raid other nests fo ants to act as their slaves (a phenomenon referred to by contemporar myrmecologists as dulosis). Many steal pupae rather than adults; pupae can b imbued with their masters’ nest odour and when they emerge they behave exact as though they were working for their own species. Some slave-making an depend utterly on their imported aliens, even to the extent of having no worke castes of their own and being unable to feed themselves. One of the most commo slave relationships, between a species of red ant, Polyergus rufescens, and i black victims, Formica fusca, inspired many nineteenth century writers to spea unselfconsciously of ‘Negro ants’. Others, finding the thought of slavery in th animal world abominable, have insisted that the aliens are not ‘slaves’ bu ‘auxiliaries’, as Pierre Huber did as early as 1810. Abraham Lincoln took th opposite tack, suggesting that humans should rise above ant morality (albe attributing something like that primitive Mac brainpower to black slaves):

In a phenomenon known as social parasitism, a single queen can intrude into a colony of another species, k

the host queen, and then use the host workers to rear her own brood. Here two species of the genus Lasius are involved.

> The ant, who has toiled and dragged a crumb to his nest, will furiously defend the fruit of his labor, against whatever robber assails him. So plain, that the most dumb and stupid slave that ever toiled for a master, does constantly know that he is wronged.[6]

Other ants have modes of sustenance more acceptable to human reporter Harvesting ants, which probably inspired Solomon to recommend that the sluggar should 'go to the ant . . . consider her ways and be wise', collect up seeds fro their arid environments and store them in the nest. Many researchers hav observed that they actually chew off the radicle, the germinating part of the see to prevent its growth within the nest. If the seeds become damp, they are moved t the outside of the nest in order to dry. When needed, the seeds are chewed an moistened until they can be used for food.

Another famous ant lifestyle is based upon aphids and other, similar, small bug (Homoptera). Aphids are able to suck juice out of plants using their sharp mout parts. The ants, in turn, stroke the bugs with their antennae, an act of solicitatio which induces them to secrete a droplet of 'honeydew' for the ant. The precis manner of this exchange causes some disquiet to Woody Allen, as Z in the fil AntZ. When asked 'Don't you want your aphid beer?' he protests 'Call me crazy bu I have a thing about drinking from the anus of another creature.' More decorously Victorian writers were fond of comparing ants' aphids to cows, kept for their mil However described, this relationship is just one example of the many symbiot relationships in which ant species engage, both with other insects and with plant In this particular case, the aphids enjoy the protection from predators afforded b the ants; some ants even go so far as to enclose them safely in their own nests.

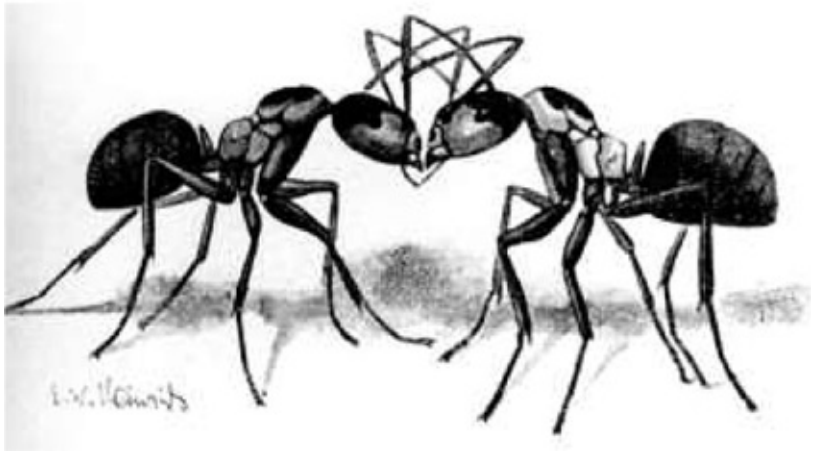
Honey ants store food in their own relatives' bodies. These desert-dwellin species feed up selected workers during times of plenty, until their bodies ar distended balloons of sugary liquid. These workers then hang from the roof of th nest until, in time of dearth, the contents of their crops are required by the colon and they feed the others by trophallaxis. Sometimes the strategy does not wor for Australian Aboriginals are skilled at finding and digging them up; the ants ar considered a sweet delicacy.

Leafcutter ants cultivate a fungus, which they use for food. As their nam suggests, they gather fragments of foliage (so successfully that they are a agricultural pest in their home, the American tropics), and transport them back t the nest. Here the leaves are impregnated with a fungus, which is left to grow unt ready for consumption. Comparisons with human farming have come easily t observers of this phenomenon.

From slave-makers to gardeners, ants each have 20 to 40 different acts in the repertoire of behaviour, depending on the species. According to some, the exac repertoire is tightly linked to the caste of the ant concerned. Others see a greate

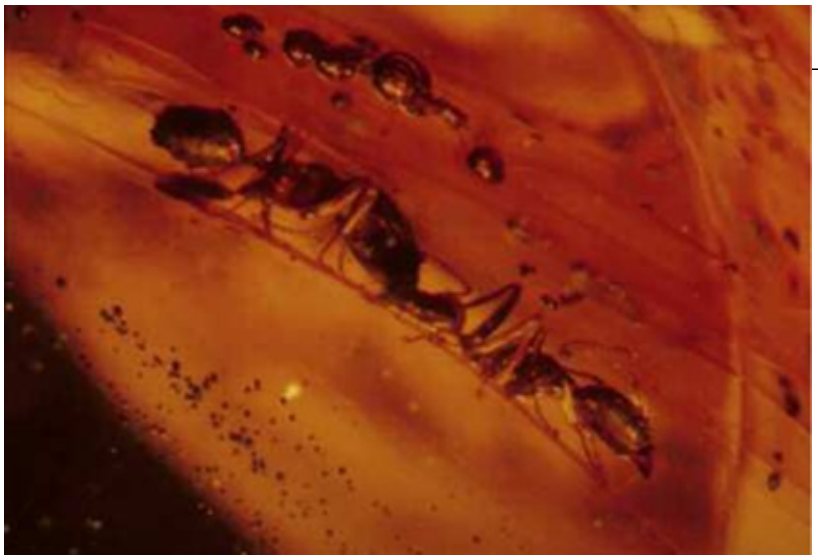
degree of behavioural flexibility in each individual, allowing her the ability t exercise a greater proportion of the total acts exhibited by the population as whole.

Coordinating the functions of the nest members – of which there can be tw million or more – requires a reliable system of communication. To find and retriev food with maximum efficiency, foragers need to be able to recruit their fello workers to good sources. They must be able to recognize their own nest mates an distinguish them from potentially hostile foreigners.



Antennal communication, using the sense of touch and especially that of smell, is crucial to ants' organized behaviour. From Forel's Social World of the Ants (1928).

If enemies are detected they need to be able to signal their presence to their ow kind, recruiting some to the battle and others to the task of saving eggs, larva and pupae. All these tasks and more are completed in the main through chemic communication – pheromones. Ants produce ten or twenty different chemicals t signal specific requests and warnings, passing them through physical contact o leaving them behind as chemical trails. Apparently complex tasks can be carrie out through a simple reinforcement system. Weaver ants, for example, joi together to bend two leaves together and glue them in place. The 'decision' to pic a particular leaf for this team effort is set in motion by a single worker; if sh succeeds in bending a leaf slightly, she releases a 'success' pheromone, whic recruits another to the task. If she too finds the leaf bendable, she will reinforce th signal with her own, and so on in a positive feedback loop. In a like manner, ant will gradually carve out an optimal homeward route from a good food sourc Pheromones also exercise more long-term control: those secreted by the quee prevent the sexual maturation of the workers, while those produced by soldier limit the numbers of their caste to a level suitable for the colony as a whol Hölldobler and Wilson summarize colony communication thus: 'Ants, like human to put it in a nutshell, succeed because they talk so well.'[7]



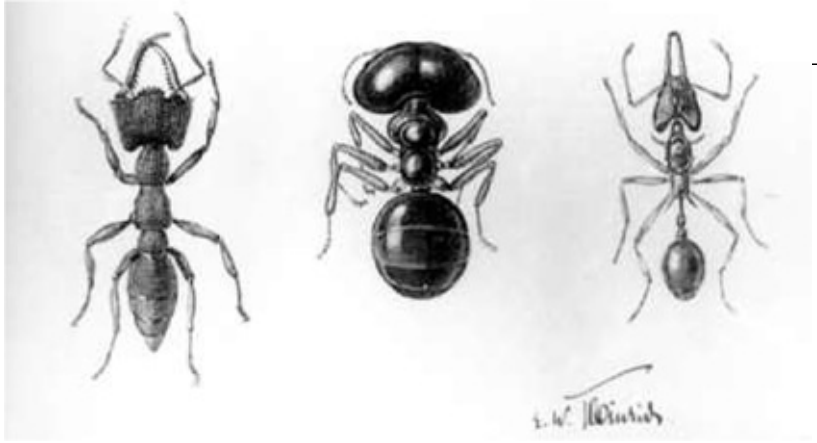
Ants of the Lower Miocene in Dominican amber (about 20 million years old). One is holding the other's abdomen with its jaws.

Ants preserved in amber show, rather beautifully, that they have been abundant i Northern Europe in something very like their modern form for 25 to 40 millio years. It has puzzled many, including Darwin, how ants have reached this moder form, with its highly developed form of social life. Until the 1930s myrmecologist got their best answers by looking at living wasps. There are no ants that liv independently, but there are some species of wasp that do.

Different solitary wasp species raise their offspring in different ways. Some leav food with their eggs, ready for the larvae when they hatch. Others continue t bring food after they have hatched. Still other species bring their progeny liv paralyzed prey, or prey that has been softened and made more edible in pelle form. Early twentieth-century researchers saw these as steps towards a soci interaction between the generations.[8] Moreover, they posited that in order to mak best use of available food resources, back in time the female had facultative switched from one of these behaviours to another. These acquired behaviours, the concluded, subsequently and gradually became fixed forms of life for futur generations, culminating in the mother's dependence on a trans-generationa worker caste (i.e. her daughters) to maintain reproductive success. Thi entomologists concluded, was how primitive, solitary wasp-ants had gradual acquired a socialized form of life, and hence evolved into modern ants.

Ants still found in Australia provide a tantalizing glimpse of primitive sociality just as its marsupials seem to illustrate a very undeveloped form of mammalia anatomy. These ants maintain rather small colonies, and their workers are no divided into specialized castes for care of the young, fighting, foraging and so on Nor do they seem to communicate much amongst themselves, but forage for food individually, like solitary wasps.

Three species of extant primitive ant. The one on the left is from Madagascar, the others from Australia. Not their unusual anatomical forms. From Forel's Social World of the Ants.



Meanwhile, the ‘waisted’ appearance of modern wasps and ants, along wit other anatomical similarities, also suggest a close evolutionary relationshi between the two families. From this and other morphological informatio entomologists predicted the physical characteristics that they expected to find i the earliest ants, during the transitional period from solitary insects into the social form. In 1966, while searching on their local beach, a retired couple fro New Jersey found the oldest amber-preserved specimens yet. Fulfillin myrmecologists’ expectations, the new fossils shared some key characteristics wit modern ants, and some with wasps. They therefore placed them in a new genu Sphecomyrma, meaning ‘wasp ant’. For entomologists, it was as exciting as th discovery of the missing link between primates and human beings. The speculated that Sphecomyrma lived much like the Australian primitives. Inside th amber they had caught a glimpse of the birth of society, 100 to 120 million yea ago.

These facts, then, represent the current scientific consensus about ants. But the may also be seen as myths, just like Plato’s and Pliny’s. I do not mean to sugges that one should consider them fiction. There is, however, no single correct way o studying ants; like everything else in our universe, they can be described o multiple levels. At various times, investigators have chosen different aspects of an life to study, including anatomy, classification, evolution, physiology psychological attributes and social behaviour. These choices, neither right no wrong in themselves, have simply reflected the preoccupations of the observers a the time they were made: collecting, dissecting, telling origin stories, knowing th human mind, understanding crowd behaviour.

One way to study ants: observation of their behaviour in nature.

Another way to study ants: scanning electron microscopy (SEM) of their physiology.

More than this, the language and models we use to try and capture and explai any natural phenomenon are drawn from our culture (‘queens’, ‘sisters’), an reflect something about our own perspectives at the same time as they describ the outside world. As this chapter began by remarking, even modern, ‘factua myrmecologists are drawn to mythic language in describing their findings. Rathe than seeing all this as a limitation on scientific objectivity, Ant suggests that b understanding the cultural contingencies of science, we gain a much richer an fuller picture of it. In the following chapter, a little digging beneath the surfac reveals some possible reasons why myrmecologists consistently describe the tin in such magnified terms.

2 Ants as Minions

Looking down on the tiny world of the ants, humans have long been tempted t
imagine that the colonies they see are kingdoms at their own disposal. The Ancien
Greeks' mythical loyal soldiers, the Myrmidons, share the root of their name wit
ants – the same base from which we get several English ant-related words such a
myrmecology or the genus Myrmecia. Ants march together with such astonishin
organization and indefatigable persistence that the Ancient Greeks saw in ther
the qualities of the most desirable or dreaded troops, depending on whose sid
they were fighting.

A veteran of the Spanish-American and American Civil Wars, Henry McCook, wa
also fascinated by ants. McCook had raised a division of volunteers in Illinoi
acting as their captain and their chaplain. But for him, ants were the ideal army
He described how ants would be the perfect minions to command:

> . . . our mountain mound-builder . . . [ants] remind us of the militia organization of our earlier frontier States – Ohio, for example, which made every adult male, not disqualified by age or otherwise, subject to military duty. Indeed, such is, in theory, the relation of all citizens of the American republic to the general government. Among our ants that duty is never dodged. There are no desertions. Lazy, cowardly and skulking ants one does not see. With heartiest good-will the call to service is met . . .[1]

‘Marching Through Georgia’ (1957) portrays ants as an invading Union army of the American Civil War.

There exists a variety of ways in which humans indulge their dream of the form army. Some, like McCook, enjoy the opportunity to experience a comparative sens of grandeur over their tiny subjects. There is also a sense in which ants exemplif the massed power of the individually insignificant, providing a comfortin alternate reality for the downtrodden. Others take consolation from the thought o empathetically entering the little world of the individual ant, who, even on he own, functions as the archetypal fairy-tale victor over apparently superior force What these visions share – from entomologists’ reminiscences, to children’s fictio to ancient myth – is a fantasy about ants based on power.

ARMIES OF THE INSIGNIFICANT

Few people get to command armies, but everyone can dream of being on the righ end of the order-giving process. Hence the pleasure of an army of toy soldiers, battalion of model Myrmidons in the original Greek sense. The fantasy of kingdom of ants under one’s rule amounts to much the same thing. The fantasi becomes, comparatively, a giant in his own world; a hectored child in the hous can enter the garden and find there a realm in which he is gigantically incontestably godlike.

Auguste Forel was such a child; he was born in 1848 in the Swiss countrysid near Lausanne to a well-connected and wealthy family. Eventually Auguste was t become an influential psychiatrist and an internationally recognized expert upo ants. As a child, however, he was timid and sickly, lonely and miserable. H detested his mother’s over-protective, neurotic Calvinist company. ‘Apart fro visits to my grandparents’, he wrote in later life, ‘I was cut off from all huma intercourse. My mother would not even let me go into the garden alone.’ He foun

his escape among the ants, whose social life began to fascinate him from the ag
of six. He watched colonies of three different species around the house, feedin
them 'lovingly . . . with bread, sugar and so forth'.[2] It would be no exaggeration t
say that the little Auguste loved his ants. He was moved to despair when h
favourite nest was raided by an army of red ants, and angrily poured boiling wate
over the invaders, but to no avail. A little later, having been taught some of th
classics, he began writing a Homeric epic, 'Wars of the Ants', a 'Fourmiad' in whic
the ant-hill building Formica pratensis, the meadow ant, played the part of th
Greeks, while the blood-red robber ants, Formica sanguinea, were the deceitfu
Trojans. Forel's notebooks, which he kept from an early age, are full of sketches
notes and coded script, all of which show how intently he absorbed himself into th
tiny realm of the ants as an escape from his mother and the 'continual surfeit o
the Bible and religious doctrine'.[3] He had found in the ants' kingdom a miniatur
topos, which though part of the larger world seemed to him to be independent o
it. It was autonomous and utopian, and crowned him as its sovereign.

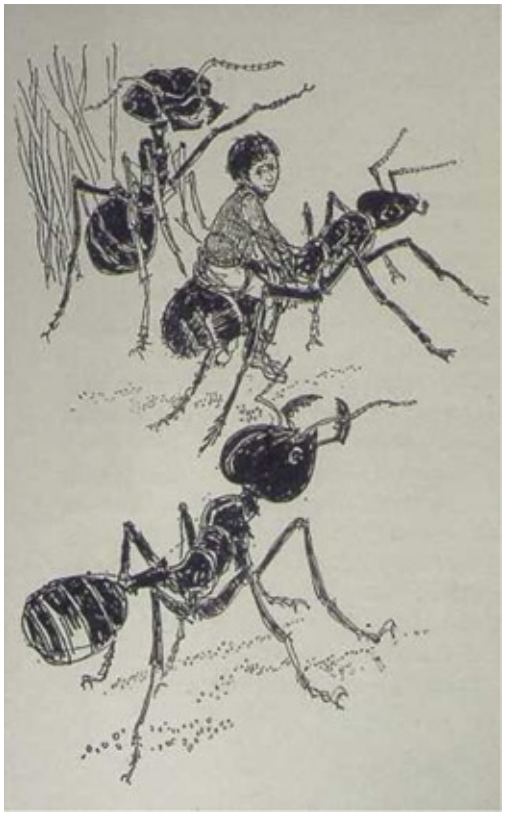
The Swiss myrmecologist Auguste Forel as an old man; as a boy, ants were his only consolation.

Forel was by no means unique in his formic consolation. As a child in the 1930
E. O. Wilson was shuffled from place to place by his separated parents. Th
nomadic existence made him, like Forel, lonely and socially anxious. Now th
world's best-known myrmecologist, he suggests that 'loneliness in a beautifu
environment might be a good if risky way to create a . . . field biologist'.[4] This wa
certainly true for him: instead of making human friends, he too found comradeshi
amongst the mythic armies of the minuscule. 'I rescued bits of Spanish moss . .
They were my friends . . . I kept harvester ants in a jar of sand under my bed . . .
discovered fairy tales. . .'.[5]

The 1960s Spanish children's book Ladis and the Ant might almost be
fictionalized account of Forel's or Wilson's childhood, featuring as it does a colon
of ants acting as saviour of its unhappy protagonist. An eight-year-old boy, Ladis,
sent away to the countryside for the summer on account of his poor health. H
takes with him his timidity and sense of inferiority; like Solomon's ants he
described in the very first paragraph as 'not strong'. It is only when Ladis

magically reduced to the size of an ant by a friendly queen, and becomes familia with the interior of the ants' nest, that he learns to be at ease and starts gettin better. The ant carries him like an obedient horse and anxiously tells Ladis 'You might suddenly take it into your head to make yourself grow inside the anthill, an destroy us all.' Ladis learns to wrestle with the ants, discovering that he can defea them if he grabs their antennae. Ladis' new-found sense of power and confidenc lasts even when he is back among humans: 'how lucky he was to be able to do jus what he liked, whenever he liked'. The memory of his personal army sustains him.

Thus the massed power of individually insignificant ants is a source of hope t the impotent. Moreover, this vision of ants is shared by a variety of cultures. I Vietnam there is a saying, 'con kien cong con vua'; by sticking together the tin ants can carry the elephant. The writer Le Ly Hayslip has described how this sayin took on additional significance during the Vietnam War: 'The American elephan could rage and stomp the Vietnamese anthill, but time and weight of numbe guaranteed that it would eventually be the ants, not the elephant, who danced o the bones of the victims.'[7] Vietnamese literature from the war compare Vietnamese teamwork with communal insect labour, while the US military wer likened to mere swarms of insects without virtues: flies and locusts. It is therefor no surprise that although the Vietnamese have oxen, their cliché asserts tha someone is 'kien cang' – strong as an ant.



Another boy who found courage through commanding an army of ant Ladis. An illustration from José Maria Sanchez-Silva, Ladis and the Ant (1968).

TOYING WITH SCALE

When people brought mathematics to bear upon the fantasy of formic minion they concluded that having an army of ants would be even better than an army o

miniature humans (or, conversely, that an army of giant ants would win ove
humans). Henry McCook's calculations made ants seem even more attractive a
agents under his control. He wondered how ants' nests compared with the Ancien
Egyptians' greatest achievements, the pyramids, and calculated how the volume
each edifice (ant mound and pyramid) related to the bodily size of its builder
'Man's bulk to his building is as 1 to 12½ millions', he concluded; 'the ant's bulk t
her building is as 1 to 5800 millions. A simple calculation will show how great
this exhibits the comparative superiority of the insect.'[8]

On reading McCook, the Belgian playwright and author Maurice Maeterlinc
commented that compared to anthills, London and New York would be 'no mor
than villages'. He went on to describe the most common assessment of ant-huma
scale: 'When we see ants . . . carrying . . . with the greatest ease, with the tips
their mandibles . . . pine needles or fragments of wood which to us would represen
beams or posts which two or three men could barely handle, we believe them to b
endowed with a muscular force . . . eight or ten times as great as our own.'[9] Truly
it would be wonderful to have such soldiers under one's command.

The little Auguste Forel, while dreaming of ants, toyed with scale in order t
triumph, mentally, over his enemies. He used to imagine that he had a mag
balloon that could alter the scale of things around him, putting his own persona
tyrants in their place.

> If [I] put one of my pet ants into the balloon, allowed the latter to expand,
> and then opened it, the ant was magnified in proportion, and had now
> become a giant creature, able to tear things to pieces and swallow them. If,
> on the other hand, a nasty little boy, or one of my enemies, was placed in the
> balloon, he was diminished accordingly. So everything happened as I
> wished.[10]

Such calculations reveal another important facet of ant representation. Leavin
aside the massed aspect of ant allies, there is comfort to be found in their sca
alone. The myths of many cultures relate victory for the poor man over the princ
the boy over the man, the David over the Goliath. Ants perfectly fulfil this role i
art and literature, signifying the success, against the odds, of the 'little guy'. Th
Indonesian version of the game 'scissors, paper, stone' illustrates the point well.
Indonesia, the three categories are ant, human and elephant. Though the huma
can trample the ant, and the elephant squash the human, ant triumphs ove
elephant since, in this game, the elephant cannot stand the ticklish sensation
having it inside its ear. In this mould also comes Frank Sinatra's ant with his [sic
'high hopes' about moving the rubber tree plant; within this tradition the ver
unlikeliness of the feat justifies his optimism. By a curious coincidence, whe
George Bush Jr named North Korea as part of the post-9/11 'axis of evil', the Nort
Koreans reached for a similar formic metaphor to describe their heroic conflict wit
the Americans. Amongst other animal comparisons, they likened their efforts t