How do birds build their spectacular constructions?

Birds are the ultimate nest-builders. Each different species has its own unique nest-building techniques and constructs these structures without ever getting confused.

When the parent birds leave the nest to search for food, their offspring are completely defenseless. Their nests that are concealed with great skill in treetops, holes in trees and cliffs, or even amidst tall grass, provide a safe, hidden shelter for the chicks.

Another purpose of the nests is to provide protection from the cold. Birds are hatched featherless, and since their muscles do not get exercised within the egg, they are relatively immobile and thus need nests to insulate them from the cold. Woven nests in particular trap body heat, providing warmth for the chicks—but constructing these structures is a detailed and difficult undertaking. The female builds the nest by carefully weaving grasses, twigs, and scavenged yarn over a fairly long period of time. She cushions the inside with feathers, hair and fine grass, thereby further insulating the nest. i

For every type of nest, finding the right building materials is essential. Birds can spend a whole day in their quest for the building materials their structure needs. Their beaks and talons are designed for carrying and arranging the materials they gather. The male bird chooses the location of the nest, and the female builds it.

These nests' features depend on the materials and techniques used in their construction. All building materials for their architectural masterworks must be pliable and compressible. Nests are built taking into account the elasticity, durability and toughness of the different materials birds use —mud, leaves, feathers, cellulose and the like. This increases the structure's durability. Using plant fibers mixed with mud, for instance, prevents cracks from developing.

First, birds mix the mortar from the materials they gather. One species that uses this technique is the cliff swallow, which builds its nests on cliffs and the walls of buildings, using mud as an adhesive to glue their nests together. They gather mud and feathers and transport them in their beaks to the construction site, where they mix mud with their saliva, smearing the mixture against the face of the cliff to form a pot-shaped structure with a round opening on top. This structure they fill with grass, moss, and feathers. Usually they build these structures in cavities under overhanging cliffs, to prevent rain from softening and thus destroying the nest. ii

Some South African birds like the penduline-tit build nests comprised of two compartments. The real entrance to the brooding chamber is concealed, while the other entrance is readily visible, presenting a false doorway to any predators. iii

The oropendola, a large and quite distinctive bird, builds its nest next to the those of wasps, which automatically keep snakes, monkeys, toucans and botflies (a type of fly deadly for these birds), from approaching their nests. iv In this way, the oropendola protects its young from the dangers that all these creatures pose for their young.

The "Stitched" Nests of Tailor Birds

The tailor bird of India has a beak like a sewing needle. As thread, it uses silk from cobwebs, cotton from seeds, and fibers of tree bark. This bird selects two or more large green leaves growing close together at the end of a branch and pulls them together. It then punches holes along the edges of each leaf, and pulls the spider silk or plant fiber through the holes to sew the leaves together, finally tying knots in each stitch to keep it from slipping. It does the same on the other side, stitching the leaves together, taking approximately six stitches to curve a leaf around.

Eventually the bird fills this resulting purse with grass. v Finally, it weaves another nest into the purse, where the female will lay her eggs. vi

Weaver Birds

Naturalists consider these birds' nests to be the most astonishing structures built by birds. This species uses plant fibers and tall plant stems to weave themselves extremely solid nests.

First of all, a weaver bird collects the building materials. It will cut long strips from leaves or extract the midrib from a fresh green leaf. There is a reason for its choice of fresh leaves: The veins of dry leaves would be stiff and brittle, too difficult to bend, but fresh ones make the work much easier. The weaver bird begins by tying the leaf fibers around the twig of a tree. With its foot, it holds down one end of the strip against the twig while taking the other end in its beak. To prevent the fibers from falling away, it ties them together with knots. Slowly it forms a circular shape that will become the entrance to the nest. Then it uses its beak to weave the other fibers together. During the weaving process, it must calculate the required tension, because if it's too weak, the nest will collapse. Also it needs to be able to visualize the finished structure, since while building the walls, it must determine where the structure needs to be widened. vii

Once it finishes weaving the entrance, it proceeds to weave the walls. To do so, it hangs upside down and keeps on working from the inside of the structure. It will push one fiber under another and pull it along with its beak, until it accomplishes a stunning weaving project. viii

The weaver bird won't just begin building its nest. It proceeds by calculating in advance what it needs to do next—first, collecting the most suitable building materials, then forming the entrance before going on to build the walls. It knows perfectly well where to thin or thicken the structure, and where to form a curve. Its behavior displays intelligence and skill, with no trace of inexperience. With no training, it can do two things at once—holding down one end of the fiber with its feet, while guiding the other end with its beak. None of its movements is coincidental; its every action is conscious and purposeful.
Another member of the weaver bird family builds a solid, rainproof nest. This bird obtains the perfect mortar by gathering plant fibers from the environment and mixing them with its saliva, which gives the plant fibers both elasticity and makes them waterproof.

Weaver birds repeat this process until their nest is complete. It's no doubt impossible to claim that they have acquired these skills unconsciously, by chance. These birds construct their nests like an architect, construction engineer, and site foreman all rolled into one.

Another interesting example of nest building is performed by sociable weaver birds of southern Africa, which nest in a single huge, cooperatively built structure with separate entrances. With the ingenuity of accomplished architects, sociable weavers build these nests, some of which are home to as many as 600 birds. ix

When it comes to nest building, why does this species choose the more complex over the easier option? Can we possibly ascribe to chance the fact that they can build such complex nest structures all by themselves? Surely not—like all other creatures in nature, they too act by the directives of God.

Each species of bird has its own way of constructing nests. Each technique requires a design planned in advance, and is of such a complexity that couldn't be expected from creatures without intellect or the faculty of forethought.

We're faced with organisms devoid of reason and the willpower necessary to behave with compassion, mercy and devotion. However, these creatures clearly demonstrate the products of intelligence, reason, planning and design and compassionate and altruistic behavior. So what is the source of their behaviors? If they lack the capacity to produce these actions through their own willpower, there must be a power that teaches them to act in this way. This power is God, the Lord of the earth, the heavens and everything in between.

Anyone of reason and conscience will easily understand that such behavior can occur only by the power and control of God, the Lord of all living things. As He reveals in the Qur'an:

> **And in your creation and all the creatures He has spread about, there are Signs for people with certainty. (Qur'an, 45: 4)**

I Giovanni G. Bellani, Quand L'oiseau Fait Son Nid (When The Bird Makes Its Nest) (Arthaud, 1996), p. 85.
II Russell Freedman, How Animals Defend Their Young (New York: E.P. Dutton, 1978), p. 4.
III Giovanni G. Bellani, Quand L'oiseau Fait Son Nid (When The Bird Makes Its Nest) (Arthaud, 1996), pp. 24, 90.
IV Giovanni G. Bellani, Quand L'oiseau Fait Son Nid (When The Bird Makes Its Nest) (Arthaud, 1996), p. 89.
V David Attenborough, The Life of Birds (New Jersey: Princeton University Press, 1998), pp. 233-234.
VI Russell Freedman, How Animals Defend Their Young (New York: E.P. Dutton, 1978), p. 47.
VII David Attenborough, The Life of Birds (New Jersey: Princeton University Press, 1998), p. 234.
VIII Slater, The Encyclopedia of Animal Behavior, p. 42; and Attenborough, Life of Birds, pp. 234-235.
IX "Kalahari Gems," www.safricavoyage.com/kalahari.htm

https://www.harunyahya.info/en/articles/how-do-birds-build-their-spectacular-constructions