The Hawaiian Adze (Koʻi) and Its Role in Canoe Building

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1. The Adze and Its Materials

According to the historian Samuel Kamakau, the ancient Hawaiian adze maker recognized **four distinct types of basalt** suitable for adze making: **hokele (hoʻokele)**, **ʻala makahinu** (a bluish lava), **pahoa**, and **makaia**. None of these specific stone types can be clearly identified today, but they were valued for their strength, grain, and durability.

Kamakau also wrote that when **compact, water-worn basalt**—known as **ʻalaʻala lelekepue**, **ʻala piamakahina**, or **ʻala haumeku ʻolokele**—was found, **expert stoneworkers** would travel to that site to examine the stone's quality and texture to determine which would produce solid, dependable adzes.

The ancient Hawaiians understood that not every rock was equal. The best basalt had to be **dense, fine-grained, and free of faults or fractures**, qualities only a skilled eye and hand could detect. Adze makers were, in many ways, the geologists of their time — reading the signs in stone to reveal its inner strength and working potential.

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2. The Adze-Making Process

The adze-making process consisted of **three main stages**:

1. **Quarrying** – obtaining suitable stone material.
2. **Flaking** – rough shaping by striking and chipping.
3. **Grinding and Polishing** – refining and finishing the cutting edge.

Quarrying the Stone

The first step was to locate the right basalt. Once a suitable vein or deposit was found, **workable pieces were extracted** using hammerstones and wooden wedges. These pieces were known as **adze blanks**.

Flaking

The adze maker then began to **chip and flake** the stone with precision. Each blow had to be carefully judged; one wrong strike could ruin days of work. At this stage, the stone took its **basic "preform" shape**—roughly the outline of the finished adze but without its cutting edge.

Grinding and Polishing

Next came the long process of **grinding the adze on a flat stone (hoana)**, often using sand and water as an abrasive. The craftsman would work each face until smooth and straight, refining the bevel that would become the cutting edge. A finely polished adze was not only beautiful—it was strong, balanced, and capable of making clean, efficient cuts.

The finished Hawaiian basalt adze was **harder than spring steel**, a versatile tool that allowed the craftsman to carve canoes, build houses, and shape the world around him. The adze was both a practical tool and a **symbol of ingenuity and culture**—the tool that shaped Hawaiian civilization.

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3. The Adze Maker and the Canoe Builder

The **adze makers (poʻe ka koʻi)** formed a distinct class of craftsmen within ancient Hawaiian society. They were specialists—men who understood the language of stone. They did not build canoes themselves but supplied the **kahuna kālai waʻa** (canoe builders) with their most vital tools.

The two professions were deeply intertwined: **without the adze maker, there could be no canoe builder**, and without the canoe builder, the adze maker's work held no purpose. Theirs was a partnership built on respect and mutual dependence.

Adzes were also important trade goods. Skilled adze makers exchanged their tools for food, clothing, and other goods, and adzes circulated widely between islands. A fine, well-balanced adze was **as valuable as a prized food source or woven kapa**, and it symbolized the connection between communities and crafts.

To the Hawaiians, the adze was more than an instrument of labor—it was a manifestation of **ancestral knowledge**, passed from one skilled hand to another.

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4. The Mauna Kea Adze Quarry

One of the most remarkable archaeological and cultural sites in Hawai‘i is the **Mauna Kea Adze Quarry**, located high on the southern slopes of the mountain. It is not only the largest adze quarry in Hawai‘i but the **largest in all of Polynesia**, covering roughly **three square miles** at elevations between **11,000 and 12,400 feet**.

The environment at this altitude was harsh and inhospitable. The quarry was more than **twenty miles from the nearest permanent settlement**. There was no fuel, no food, and the cold at night was extreme, even in summer. Water had to be carried from **Lake Waiau**, about two miles away, using containers and great effort.

According to modern archaeologists **Patrick McCoy** and **Richard Gould**, who conducted detailed studies at the site, any prehistoric expedition to the quarry must have been a **carefully planned endeavor**, lasting **two or more weeks** during the short summer season.

At the site, workers used **levers and hammerstones** to detach slabs of fine basalt already fractured by heat and cold. They quarried deep into the bedrock—sometimes over fifteen feet—to reach the best material.

Archaeological evidence shows that the quarry was also a **spiritual landscape**. More than **forty structures and shrines** have been identified there, suggesting that the stoneworkers prayed and offered rituals to ensure success and safety. These shrines remind us that, for the Hawaiian craftsman, **spirituality and skilled labor were inseparable**.

The many **unfinished and abandoned adzes** left on the site demonstrate how selective these craftsmen were. Only the finest pieces were carried down the mountain—a difficult hike when a single preform could weigh over fifteen pounds. Each finished tool represented not only skill and patience but **physical endurance, faith, and respect for the mountain** itself.

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5. The Craft and Skill of the Canoe Builder

For the **kahuna kālai wa‘a** (master canoe builder), the adze was the **hand of creation**. With it, he shaped both wood and spirit. Every stroke of the adze was guided by prayer, focus, and knowledge passed down through generations.

Early European visitors marveled at the skill of Hawaiian canoe builders. In 1813, **John Whitman** wrote:

> “When we reflect upon the disadvantages under which they labored before the introduction of iron, we cannot but admire the ingenuity which enabled them to construct such a vessel with no other tools than those made from shells and stones, and the skill and patience which rendered such materials subservient to such important purposes.”

The canoe builder's expertise combined **engineering, intuition, and artistry**. He knew the grain of the koa, the way the adze should bite into the wood, and the rhythm of his work. The sound of his adze—sharp, even, and deliberate—was the voice of craftsmanship.

Hawaiian canoes, though made with stone tools, were **as precise and smooth** as those made with steel in Europe. The hulls were graceful and symmetrical, proof of an advanced understanding of design and hydrodynamics long before Western contact.

Each canoe was not merely a vessel; it was **a living being**, brought into existence through ceremony, patience, and the unity of man, tool, and nature.

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6. Sacred and Specialized Forms of the Adze

Not all adzes were alike. Each was made for a specific purpose and sometimes for a sacred function. Among the most important was the **koʻi ʻawili**, also called **koʻi ʻāikeʻe**, a **swivel-headed adze** used to carve narrow interior spaces where a straight adze could not reach.

According to tradition, this tool was the invention of the god **Kupaʻaikeʻe**, who taught its use to man. Because of this, the koʻi ʻawili was considered **sacred**, and canoe builders prayed to Kupaʻaikeʻe before beginning interior work.

Another significant form was the **koʻi meki**, the **iron adze**, known before Western contact. It was made from drift iron washed ashore from distant shipwrecks and considered **a divine gift from the sea**, reserved for chiefs or ritual use.

After the arrival of **Captain Cook in 1778**, iron tools became common, yet traditional stone adzes continued to be used for finishing work. Many builders believed that **stone adzes cut more cleanly and precisely**, leaving a smoother surface.

By the late 19th century, observers such as **William Brigham** noted that Hawaiian craftsmen still preferred their ancestral tools:

> "I have seen them use and sharpen the old stone adze, and have been astonished at the dexterity of the man and the efficiency of the tool. For the finishing touches, he dropped the foreign steel and returned to the adze of his ancestors."

To this day, the adze—now with a metal blade—remains a favorite tool across the Pacific, its form unchanged. No other implement so fully embodies **the harmony of art, science, and spirit**.

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7. Types of Adzes Used in Canoe Building

The master canoe builder employed **many types of adzes**, each suited to a specific task. No single adze could perform all the work; rather, the builder used a **kit of specialized tools**, each with a unique weight, shape, and angle.

Adze Name	Literal / Descriptive Meaning	Primary Function
Koʻi Kalai	Adze for shaping or hewing	Used for felling koa trees and rough-shaping the canoe hull. Heavy, long, and powerful.
Koʻi ʻAwili / ʻĀikeʻe	Swivel-headed or bent adze	Used for hollowing narrow interior sections of the canoe such as the bow and stern. Associated with the god *Kupaʻaikeʻe*.
Koʻi Kaholo	Adze of quick movement	Used to shave and smooth the outer sides of the canoe in rapid strokes.
Koʻi ʻAhuluhulu	Fine or small adze	Used for finishing and smoothing the canoe's surface after rough shaping.
Koʻi ʻAuwaha	Channel adze	Used to carve trenches or shape the bottom interior of the hull for balance and water flow.
Koʻi Hoʻomaʻemaʻe	Cleaning or smoothing adze	Used for final detailing, refining, and polishing the hull.
Koʻi Kupaʻaikeʻe	Named for the god *Kupaʻaikeʻe*	A sacred adze used for interior carving and hollowing, often used with prayer and ceremony.
Koʻi Meki	Iron adze	Introduced before foreign contact; made from drift iron but kept the traditional Hawaiian adze form.
Koʻi Kila	Steel adze	Modern version of the traditional koʻi; used today but still shaped and handled like the ancient ones.
Koʻi Hoʻopaʻapaʻa / Koʻi ʻŌpio *(less common)*	Small or light adze	Used for detailed work, smoothing small projections, or fitting parts together.

Summary

Each adze had a specific weight, bevel, and hafting angle, giving the builder complete control over the shaping process. In skilled hands, the adze became an **extension of the craftsman's body**, combining balance, precision, and intention.