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Cite this as: *BMJ* 2022;378:o2257

<http://dx.doi.org/10.1136/bmj.o2257>

Published: 16 September 2022

## When I use a word . . . Elizabethan

The end of the second Elizabethan age prompts reflections on the name Elizabeth. When King George VI died on 6 February 1952, his elder daughter, Princess Elizabeth Alexandra Mary, became queen and chose the title Elizabeth II. The name Elizabeth has its origin in Hebrew, originally as Elisheva, meaning “my God [is] an oath.” The name subsequently became Elizabeth, perhaps through the influence of the word shabbat, meaning the Sabbath. Whether Queen Elizabeth knew this and understood the origin of her name, she lived her life in a way that was consistent with its meaning. Two other Elizabeths, Elizabeth Blackwell and Elizabeth Garrett Anderson, were the first women to become registered medical practitioners in the USA and the UK respectively. A natural language programme intended to function as a psychotherapist was named after Eliza Doolittle, the heroine of George Bernard Shaw’s play *Pygmalion*. And ELISA is an acronym for enzyme-linked immunosorbent assay, an important method for measuring proteins in biological samples.

Jeffrey K Aronson

### The death of a king

The end of the second Elizabethan age prompts reflections on the name Elizabeth.

King George VI died on 6 February 1952, and 10 days later the *British Medical Journal*, as it was then called, published an editorial<sup>1</sup> and a separate article,<sup>2</sup> in which, among other things, the late king’s illnesses were discussed. The king had been a heavy smoker. His favourite brand was Craven “A” Extra Strength, “preferred by Outdoor men,” as one advertisement put it, and “made specially to prevent sore throats.” And the manufacturers Benson and Hedges advertised on their cigarette boxes “By appointment to His Majesty the King.” The royal family’s endorsement of cigarettes ended in 1999, when it withdrew its royal warrant from the tobacco company Gallaher, the makers of Benson & Hedges and Silk Cut cigarettes.<sup>3</sup> Many of the king’s medical problems were attributable to smoking: peripheral vascular disease, lung cancer, and the myocardial infarction from which he finally died.

In the same issue of 16 February 1952 the journal included an editorial welcoming the accession of Queen Elizabeth II and “offering homage to the new sovereign.”<sup>4</sup>

When she learnt of her father’s death, Princess Elizabeth of York, as she was then styled, was on tour abroad, in Kenya. When asked what regnal name she intended to use she said that it would be her own, by which she meant the first of her three given names. Many of us have two given names, and members of the Royal Family often have three or more. The new king, Charles III, has four, Charles Philip Arthur George, as does his elder son, the new Duke of Cornwall and Cambridge and Prince of Wales, William Arthur Philip Louis.

The late Queen’s three given names were Elizabeth Alexandra Mary, Elizabeth after her mother, Elizabeth Angela Marguerite Bowes-Lyon, Alexandra after her paternal great-grandmother, Alexandra Caroline Marie Charlotte Louise Julia (Alexandra of Denmark), the wife of King Edward VII, and Mary after her

paternal grandmother, Victoria Mary Augusta Louise Olga Pauline Claudine Agnes (Mary of Teck), the wife of King George V.

### Semitic roots

The name “Elizabeth” is of Hebrew origin. It was originally Elisheva, who is named in Exodus 6.23 as the daughter of Aminadav, sister of Nachshon, and wife of Moses’ brother, Aaron.

The Semitic root **ʾl** signified God, represented in Hebrew names that begin or end in el, such as Elijah and Elisha, Daniel, Ezekiel, Gabriel, Ishmael, Michael, Raphael, Samuel, and many others, including Israel. And Eli (in Hebrew pronounced “ay-lee”) means “my God,” as in Matthew 27.46 and Mark 15.34.

The Semitic root **šb** meant seven. In Hebrew, Biblical and modern, the word for seven is sheva. Shavuot means weeks, and the festival of that name falls seven weeks, seven times seven days, after Passover. Shiva is the period of seven days of mourning observed after a death. A similar root, **šbt**, means to cease or rest, giving the day of rest, Shabbat, which is also the seventh day of the week. The Hebrew word meaning to swear, leshava, and the word for an oath, sh’vua, have been conjecturally connected with the phrase “to bind oneself with sevens” in swearing oaths.<sup>4</sup> The reason is not clear, but it is reminiscent of the fact that when one wears a phylactery on one’s left arm, one winds the strap attached to it seven times around the arm, according to the injunction in Deuteronomy (6.8) to “bind them for a sign upon thine hand,” ending with the sign of the letter shin, the first letter of sh’vua.

Thus, putting the two roots together, Elisheva literally means “my God [is] an oath,” and the name then becomes Elizabeth, when “sheva” and “Shabbat” (Sabbath) intertwine with each other.

So the Elisheva of the Old Testament becomes the Elizabeth (Ἐλισάβετ) of the New Testament, where we meet her as a descendant of Aaron, wife of Zacharias, and the mother of John the Baptist (Luke 1.5–60).

## Two medical Elizabeths

Two medical Elizabeths are worthy of note, sharing as they did the same unique distinction, each in her own country.

Elizabeth Blackwell was born in 1821 in Bristol, but when her father suffered financial difficulties during the political turmoil of 1831, the family moved to New York and later to Cincinnati.<sup>5</sup> She entered medical school in Geneva College, New York State in 1844, partly because she appreciated the need for female doctors to whom women could turn for help with certain medical problems, and partly because at that time the term “female physician” was used to describe abortionists. Blackwell was the first woman to graduate as a doctor in the USA, which she did in 1849, first in her class of about 150 students; the rest were all men. She practised in the USA, but in 1858, on a visit to London, taking advantage of the 1858 Medical Act, she had her name registered by the newly founded General Medical Council, the only woman to do so at that time.

When Blackwell received her diploma from Geneva College she said that “It shall be the effort of my life to shed honor on your diploma.”<sup>6</sup> This statement is highly reminiscent of the pledge that Queen Elizabeth gave on her 21st birthday in 1947: “I declare before you all that my whole life, whether it be long or short, shall be devoted to your service and to the service of our great imperial family to which we all belong. ... God help me to make good my vow and God bless all of you who are willing to share in it.” Like the queen, Blackwell was motivated by her Christian faith, which manifested itself in her devotion to the cause of women’s health, in training female medical students, and in her opposition to slavery.

Elizabeth Garrett Anderson, who was born Elizabeth Garrett in 1836 in Aldeburgh, Suffolk, was the first woman to graduate in medicine in the UK.<sup>7</sup> In 1859 she met Elizabeth Blackwell, who encouraged her to seek entry to medical school. After unsuccessfully approaching London teaching hospitals and the universities of Edinburgh, St Andrews, and London, she persuaded the Society of Apothecaries to allow her to sit their examinations after she had completed the required courses of study as a private student of teachers from recognised medical schools and having served her apprenticeship under a licensed apothecary. The society awarded her its licence in 1865, and she was first woman practising in Britain to have her name registered by the GMC. She became the only female member of the BMA in 1873.

Garrett set up practice in Upper Berkeley Street in London, and in 1866 established the St Mary’s Dispensary for Women and Children in Marylebone. In 1871, she married James Anderson and, despite contemporary expectations for women around the obligations of family life, continued to pursue her career. She added 10 beds above the dispensary and called them the New Hospital for Women. In 1890 the hospital moved to larger premises in the Euston Road, with 42 beds, and in 1918, the year after her death, it was renamed the Elizabeth Garrett Anderson Hospital. It employed only female medical staff.

## A therapeutic Eliza

The name Elizabeth, or Elisabeth, has many variants. Elspeth is a contraction. Isabel is an English version of a Spanish form, with variants of its own—Isobel, Isabella, Isbel, and Ishbel. Shortened forms include Elsa, Eliza, Lisa, Liza, or Liz, Bess, Bet, and Beth, and pet forms include Elsie, Lizzie, Betty, Bessy, and Betsy. Louisa May Alcott used the name Beth for one of the March sisters in *Little Women* (1868–9), a character she based on her sister Lizzie; like Lizzie, Beth dies after developing scarlet fever. Somerset Maugham’s first novel, *Liza of Lambeth* (1897), written when he was a medical

student at St Thomas’ Hospital, depicts Liza’s death after a miscarriage.

Eliza Doolittle is the heroine of George Bernard Shaw’s play *Pygmalion* (1913). Actually, when Higgins asks her what her name is, she says it’s Liza. Higgins, however, calls her Eliza, as does everyone else in the play, except her father, who also sometimes calls her Liza. The stage directions use both forms.

Joseph Weizenbaum, a refugee from Nazi Germany in 1936, became a pioneer in computer science. In 1966, working in MIT’s Artificial Intelligence Laboratory, he developed a natural language computer programme and called it ELIZA after Eliza Doolittle. “Its name,” he wrote, “was chosen to emphasise that it may be incrementally improved by its users, since its language abilities may be continually improved by a ‘teacher’. Like the Eliza of *Pygmalion* fame, it can be made to appear even more civilised, the relation of appearance to reality, however, remaining in the domain of the playwright.”<sup>8</sup> ELIZA was an early form of chatbot; it mimicked a psychotherapist, listening to people’s stories and noncommittally asking for more information. Here’s an example:

Men are all alike.

IN WHAT WAY

They’re always bugging us about something or other.

CAN YOU THINK OF A SPECIFIC EXAMPLE

Well, my boyfriend made me come here.

YOUR BOYFRIEND MADE YOU COME HERE

He says I’m depressed much of the time.

I AM SORRY TO HEAR YOU ARE DEPRESSED

It’s true. I am unhappy.

DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY

...

ELIZA was popular with patients, because it generated the illusion that it understood them.

## An acronymic Elisa

In 1971 Eva Engvall and Peter Perlmann described an enzyme-linked immunosorbent assay, ELISA for short.<sup>9</sup> ELISA assays are used to detect proteins of various kinds in biological samples, for example in diagnosing HIV infection and in detecting antibodies to SARS-CoV-2.<sup>10</sup>

## An apt name

I think it likely that the late Queen Elizabeth knew and understood the meaning of her name. And its meaning, “my God [is] an oath,” in what might be regarded as a sort of nominal determinism, certainly reflected the way she comported herself throughout her life, prompted by her deep religious faith, and remembering both her Coronation Oath of 1953 and her 21st birthday pledge.

Competing interests: none declared.

Provenance and peer review: not commissioned; not peer reviewed.

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