

## DEVELOPMENTAL TWISTS

# A Question of Identity

Tsuku Mogami

Fame came to me at an early age. Invitations poured in from around the world, but my boss wasn't keen for me to leave the lab – travel was too risky, he said. Finally, he agreed that I could attend a local meeting in our home town of Göttingen. He couldn't attend personally, so he sent me with a zoologist friend of his instead.

The meeting was to celebrate the 50th anniversary of Jacob Henle's doctorate. Speeches glorified the great anatomist, while an appreciative audience raised their glasses. During a gap in the festivities, two celebrants wandered over to my table.

"So, this is it," said the first celebrant, stooping to inspect me through his monocle. "Ernst Haeckel will finally be vindicated."

Eight years ago, the famous evolutionary embryologist had published a popular science book, *The Evolution of Man* (1874). It included illustrations showing that at 3 weeks 'the human embryo, even if we investigate it most exactly with the sharpest microscope, is absolutely indistinguishable from the embryo of the same age of an ape, dog, horse, cow, etc.'. Clear evidence supporting his theory that embryo development takes the same path as evolution: ontogeny recapitulates phylogeny.

The following year, Wilhelm His challenged the authenticity of Haeckel's illustrations. Those of the human embryo were clearly invented because they showed a free allantois, a structure never visible in humans. Haeckel had tailored his facts to fit his theory, relinquishing his right to be considered a serious scientist.

That's when my boss, Wilhelm Krause, came on the scene. He published an illustration of me displaying my free allantois.

Haeckel was triumphant! He admitted that the illustrations in his book were schematic deductions based on theory, rather than directly drawn from nature. But, the point was, he had correctly predicted my free allantois! It was his critics who were blinkered, not him. Haeckel incorporated my drawing in the next edition of his book, to bring the point home to his readers.

Unconvinced, Wilhelm His embarked on the most thorough study of human embryo development ever undertaken. After four years of intensive study, he announced that I wasn't human but a bird! He demanded I should be sent abroad for independent examination. My boss defended my authenticity and refused to let me travel. Finally, he compromised: Henle's local anniversary celebration was my first major exposure to the scientific public.

The first celebrant let his monocle drop and stepped back.

"I'm not so sure he'll come out of this so well," said the second celebrant, stroking his goatee beard while leaning in to take

a close look at me. "Haeckel has a habit of playing fast with the facts."

"What do you mean?"

"Fourteen years ago, in *The Natural History of Creation*, Haeckel printed the same wood engraving of an embryo three times, labelling the images dog, chick and turtle. A zoologist from Basel, Ludwig Rüttimeyer, was first to point out the misdemeanour. Haeckel removed the replicates in later editions, but instead of apologising, mocked Rüttimeyer for denying the well-known similarity of early vertebrate embryos."

"Are you saying he's dishonest?"

"He's so convinced he's right, he feels justified in cutting corners."

"But what about Krause?" said the first celebrant, waving his monocle. "Why would he publish a fake? He had nothing to gain."

"Perhaps he made a genuine mistake, didn't know his embryo had been mislabelled as human instead of bird. After reading about the controversy maybe he thought his moment had come: he had the evidence that would vindicate Haeckel."

"Well, we'll soon find out."

It wasn't long before several others approached. One of them raised me onto a stage. The objective descended and hovered above me, adjusting its height every so often. "Clearly a bird," announced the microscopist, stepping back. "Take a look yourself."

The objective resumed its undulatory motions. "Agreed," said the new operator, "though I can't tell whether it's chick, duck or turkey."

My boss never accepted the verdict. I was never allowed out again. Haeckel removed my picture from later editions of his book.

Why had Haeckel published invented images? Why had he attacked those who tried to correct him, instead of apologising? Why had my boss continued to defend my authenticity despite mounting contradictory evidence? And why hadn't he come along to Henle's celebration to hear the verdict?

These questions continue to mystify me, but, then again, maybe that's because I'm not human.

### Postscript

More about this and the previous story ('The Attic') by Tsuku Mogami can be found in *Haeckel's Embryos: Images, Evolution and Fraud* (2015) and *Embryos in Wax: Models from the Ziegler Studio* (2002) by Nick Hopwood.

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