

Mr Kwok's GP Class Task

Read the following article from NY Times and answer the following question:

Birds Do It. Bees Do It. Dragons Don't Need To.

By NEIL SHUBIN

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DRAGONS and virgin births are the stuff of myth and religion. Except, that is, in Kansas, where they have recently come together in a way that should alter the way many of us look at nature and demonstrate the risks in our habit of using it to help us make ethical decisions.

Keepers at Wichita's zoo got a surprise last year when they found developing eggs inside the Komodo dragon compound. Komodos are large rapacious lizards naturally found in Indonesia, but increasingly populating zoos around the world. Finding fertile embryos of dragons is a joyous occasion – there are only a few thousand of the lizards in the wild and captive breeding may be the only way to keep the species around.

But these eggs – two of which hatched a few weeks ago – were unusual: they developed from a female that had had no male of the species in close proximity for more than a decade. Judging from similar occurrences over the past two years in Britain, it appears that these lizards sometimes use a form of virgin birth in which eggs hatch without conception. The embryos are genetic clones of the mother.

Komodos – like many fish, amphibians and reptiles – have lots of reproductive tricks. For example, females can store sperm for a long time, tiding them over when conditions may be poor for reproduction. It's possible that the Wichita dragon eggs could have been fertilized by the sperm from a male that was on site a long time ago. But DNA analysis of the "miracle embryos" from Britain showed that every bit of their DNA came from the females, and nobody should be surprised if this is also true of the Kansas dragons.

Virgin birth, known to biologists as parthenogenesis (from the Greek, "parthen" meaning virgin or maiden and "genesis," beginning), has been seen in other species over the years. Some lizards occasionally produce offspring in this way. So do several species of fish, including a female hammerhead shark at the Henry Doorly Zoo in Omaha that produced offspring without a male last year.

The shark example is particularly striking because sharks are very primitive living fish, having shared a common ancestor with us over 400 million years ago. Biological cloning is not a recent invention of scientists; it is an ancient ability. And sharks, fish and lizards are probably only the tip of the iceberg. We know of virgin birth only in those rare instances when we've been lucky enough to see it. Nobody knows how common it is because there has been no systematic search for the phenomenon.

The big question these virgin births raise is this: If some females can get along without males, why does any species have males? The reason is simple. With virgin birth, hatchlings are simply genetic duplicates of the mother. In a world of clones, there would not be enough variation for populations to adapt. Virgin birth, then, is a great stopgap measure to ensure the survival of a species, but works against it in the long haul.

Cloning is one of many mechanisms species use to survive in a dangerous world. Indeed, the diversity of reproductive strategies seen in animals staggers the imagination. Some reptiles do not determine sexes genetically, but rely on different incubation temperatures to determine the development of males and females. Other creatures can actually switch sexes during their lifetimes, being born male and developing as females. Still others can switch sexes based on behavioral cues in the social group. There is no one way that creatures start development, grow and form sexes – there are many varied ways.

Unfortunately, humans seem to forget this fact when we find ourselves turning to nature to guide us through difficult choices, such as arguments about whether life begins at conception, or over the proper structure of the family. Or, more recently, regarding the morality of cloning. Whether we're talking about raising bigger cattle or growing life-saving organs or trying to "live forever," both sides like to stress their abilities to judge what is "natural." Judging from Komodo dragons, lizards and sharks, the answer seems to be that for reproduction, almost anything goes.

And that is the point. Biology is about variation. Without variation, the world would be static and unchangeable, and species would gradually disappear as they failed to meet challenges like changing climates and environments. So as we continue our very necessary debates over ethical issues, let's bear in mind that morality is a concept limited to our species. The natural world is a fuzzy place that doesn't always accommodate our decidedly human need to find cut-and-dried categories.

Neil Shubin, an associate dean at the University of Chicago and the provost of the Field Museum, is the author of "Your Inner Fish: A Journey Into the 3.5-Billion-Year History of the Human Body."

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Task Objective: Unpack the text in relation to the theme on Family

Question:

What is the author's stand in this issue? (Or in other words, what is the author trying to say here?) How do you know—what evidence is there?