

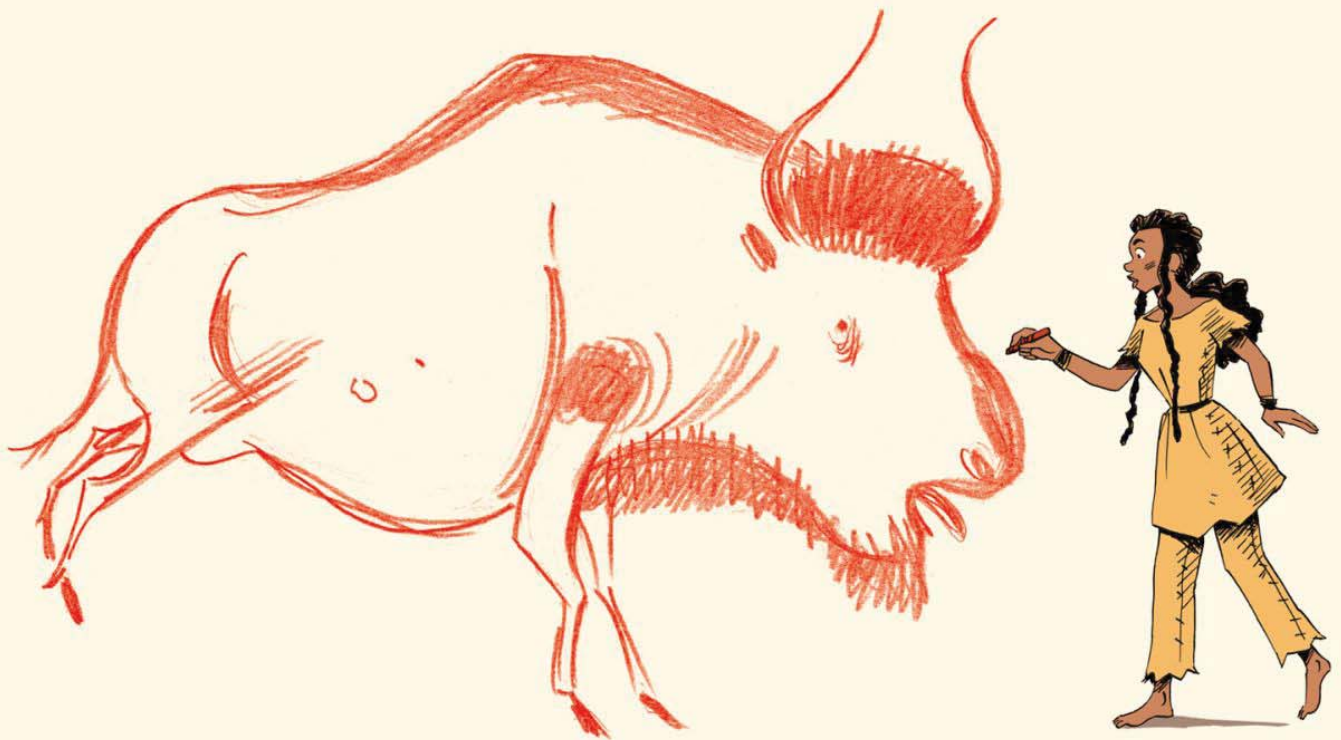
Yuval Noah Harari

David Vandermeulen • Daniel Casanave



Sapiens

A Graphic History



The Birth of Humankind

Volume One



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Sapiens
A Graphic History

The Birth of
Humankind

VOLUME ONE

HARPER  PERENNIAL

NEW YORK • LONDON • TORONTO • SYDNEY • NEW DELHI • AUCKLAND

HARPER  PERENNIAL

TIMELINE OF HISTORY

NUMBER OF YEARS AGO

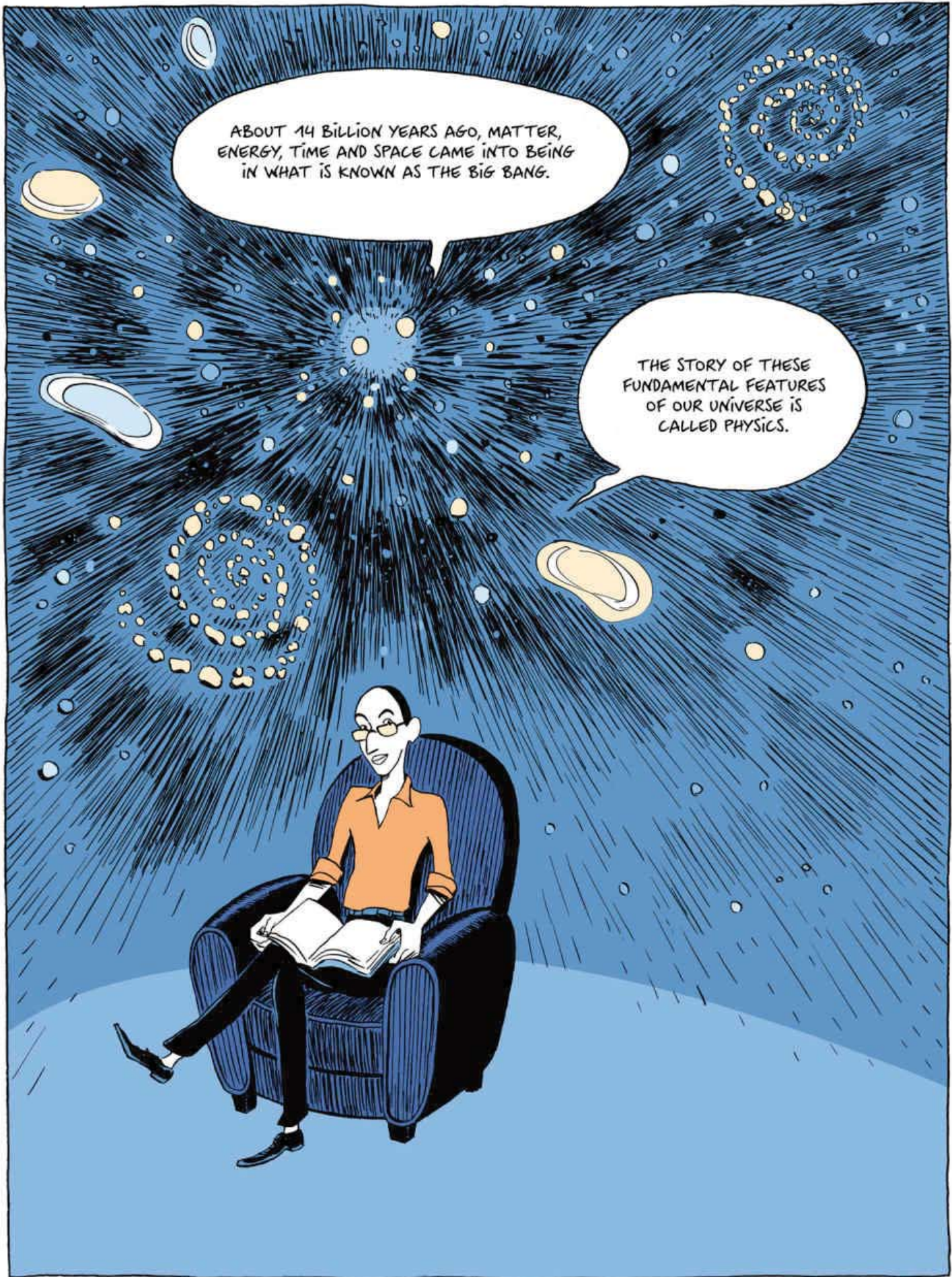
- 13.8 BILLION MATTER AND ENERGY APPEAR. BEGINNING OF PHYSICS.
FORMATION OF ATOMS AND MOLECULES. BEGINNING OF CHEMISTRY.
- 4.5 BILLION FORMATION OF PLANET EARTH.
- 3.8 BILLION EMERGENCE OF ORGANISMS.
BEGINNING OF BIOLOGY.
- 6 MILLION LAST COMMON GRANDMOTHER OF HUMANS AND CHIMPANZEES.
- 2.5 MILLION HUMANS EVOLVE IN AFRICA. FIRST STONE TOOLS.
- 2 MILLION HUMANS SPREAD FROM AFRICA TO EURASIA.
EVOLUTION OF DIFFERENT HUMAN SPECIES.
- 500,000 NEANDERTHALS EVOLVE IN EUROPE AND THE MIDDLE EAST.
- 300,000 DAILY USAGE OF FIRE.
- 200,000 HOMO SAPIENS EVOLVES IN AFRICA.
- 70,000 THE COGNITIVE REVOLUTION. EMERGENCE OF STORYTELLING.
BEGINNING OF HISTORY. SAPIENS SPREAD OUT OF AFRICA.
- 50,000 SAPIENS SETTLE AUSTRALIA. EXTINCTION OF AUSTRALIAN MEGAFUNA.
- 30,000 EXTINCTION OF NEANDERTHALS. HOMO SAPIENS THE ONLY SURVIVING HUMAN SPECIES.



16,000	SAPIENS SETTLE AMERICA. EXTINCTION OF AMERICAN MEGAFUNA.
12,000	THE AGRICULTURAL REVOLUTION. DOMESTICATION OF PLANTS AND ANIMALS.
5,000	FIRST KINGDOMS, SCRIPT AND MONEY. POLYTHEISTIC RELIGIONS.
4,250	FIRST EMPIRE—THE AKKADIAN EMPIRE OF SARGON.
2,500	INVENTION OF COINS—A UNIVERSAL MONEY. THE PERSIAN EMPIRE—A UNIVERSAL POLITICAL ORDER. BUDDHISM IN INDIA—A UNIVERSAL TEACHING.
2,000	HAN EMPIRE IN CHINA. ROMAN EMPIRE IN THE MEDITERRANEAN. CHRISTIANITY.
1,400	ISLAM.
500	THE SCIENTIFIC REVOLUTION. HUMANKIND ADMITS ITS IGNORANCE AND BEGINS TO ACQUIRE UNPRECEDENTED POWER. EUROPEANS BEGIN TO CONQUER AMERICA AND THE OCEANS. THE ENTIRE PLANET BECOMES A SINGLE HISTORICAL ARENA. THE RISE OF CAPITALISM.
200	THE INDUSTRIAL REVOLUTION. FAMILY AND COMMUNITY ARE REPLACED BY STATE AND MARKET. MASSIVE EXTINCTION OF PLANTS AND ANIMALS.
THE PRESENT	HUMANS TRANSCEND THE BOUNDARIES OF PLANET EARTH. NUCLEAR WEAPONS THREATEN THE SURVIVAL OF HUMANKIND. ORGANISMS ARE INCREASINGLY SHAPED BY INTELLIGENT DESIGN RATHER THAN NATURAL SELECTION.
THE FUTURE	INTELLIGENT DESIGN BECOMES THE BASIC PRINCIPLE OF LIFE? FIRST NON-ORGANIC LIFE-FORMS? HUMANS BECOME GODS?



REBELS OF
THE SAVANNAH



ABOUT 14 BILLION YEARS AGO, MATTER, ENERGY, TIME AND SPACE CAME INTO BEING IN WHAT IS KNOWN AS THE BIG BANG.

THE STORY OF THESE FUNDAMENTAL FEATURES OF OUR UNIVERSE IS CALLED PHYSICS.

ABOUT 300,000 YEARS AFTER THEIR APPEARANCE, MATTER AND ENERGY STARTED TO COALESCE INTO COMPLEX STRUCTURES WE CALL ATOMS.

THESE ATOMS THEN COMBINED INTO MOLECULES.

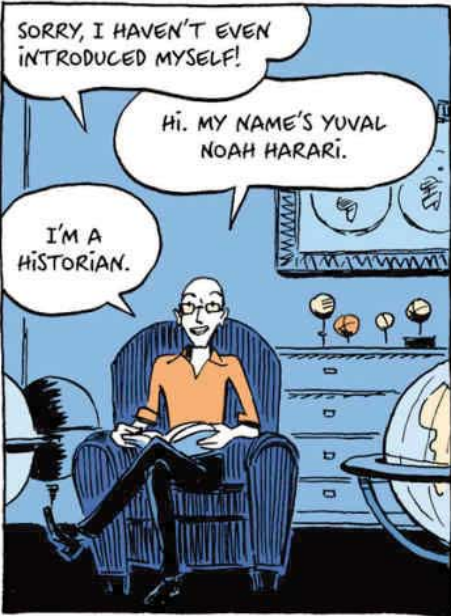
THE STORY OF ATOMS, MOLECULES AND THEIR INTERACTIONS IS CALLED CHEMISTRY.

ALMOST FOUR BILLION YEARS AGO, ON A PLANET KNOWN AS EARTH, CERTAIN MOLECULES COMBINED TO FORM PARTICULARLY LARGE AND INTRICATE STRUCTURES WE CALL ORGANISMS.

THE STORY OF ORGANISMS IS CALLED BIOLOGY.

AND THEN, ABOUT 70,000 YEARS AGO, A PARTICULAR TYPE OF ORGANISM—HUMAN BEINGS—STARTED TO FORM EVEN MORE ELABORATE STRUCTURES WE CALL CULTURES.

THE DEVELOPMENT OF THESE HUMAN CULTURES IS CALLED HISTORY.



THERE WERE HUMAN BEINGS LONG BEFORE THERE WAS HISTORY. THE FIRST HUMANS EVOLVED RIGHT HERE, IN EAST AFRICA.

2.5 MILLION YEARS AGO

SEE THAT LITTLE GROUP OVER THERE?

THEY'RE OUR ANCIENT ANCESTORS.

THEIR BEHAVIOR LOOKS KIND OF FAMILIAR, DON'T YOU THINK?

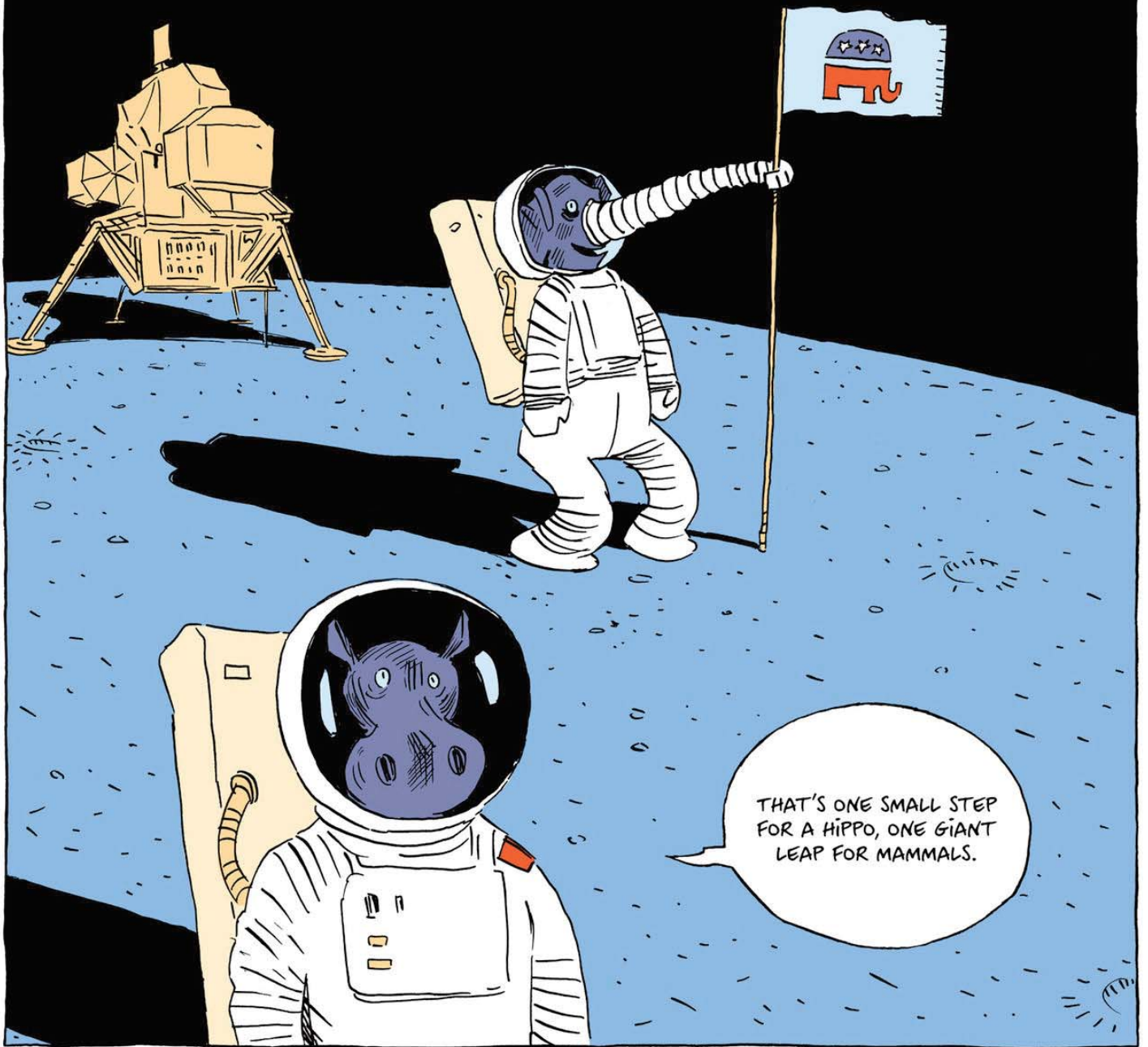
BUT THEY WEREN'T VERY DIFFERENT FROM GORILLAS...

ELEPHANTS...

OR BIRDS.

THE TRUTH IS THERE WAS NOTHING SPECIAL ABOUT THESE EARLY HUMANS. THEY WERE STILL REGULAR ANIMALS WITH NO MORE IMPACT ON THEIR ENVIRONMENT THAN BABOONS, FIREFLIES OR JELLYFISH. THERE WAS NO SIGN THAT ONE DAY THEY WOULD CONQUER AND TRANSFORM THE WHOLE WORLD...

THIS BOOK WILL EXPLAIN WHY THINGS
DID NOT WORK OUT THAT WAY...



ONE VERY IMPORTANT THING ABOUT ANCIENT HUMANS IS THEY DIDN'T ALL BELONG TO THE SAME SPECIES.

NOWADAYS, PEOPLE AROUND THE WORLD MAY LOOK DIFFERENT AND SPEAK DIFFERENT LANGUAGES, BUT WE'RE ALL THE SAME SPECIES—HOMO SAPIENS.



WHICH IS SURPRISING... AFTER ALL, THERE ARE DIFFERENT SPECIES OF ANTS, SNAKES AND BEARS... SO WHY SHOULDN'T THERE BE DIFFERENT SPECIES OF HUMANS?



IN FACT, UNTIL ABOUT 50,000 YEARS AGO, OUR PLANET WAS HOME TO AT LEAST SIX DIFFERENT SPECIES OF HUMANS. ONE LILLIPUT-LIKE ISLAND WAS INHABITED BY A SPECIES OF DWARVES...

EXCUSE ME!
SOMEONE'S AT
THE DOOR.

HI UNCLE YUVAL!

ZOE! PERFECT
TIMING! I'VE GOT
SOMETHING TO
SHOW YOU.

A CARD GAME?

THAT LOOKS
FUN! CAN WE
PLAY?

SURE WE CAN!

JUST WAIT, YOU'RE
GONNA LOVE IT!



HOMININS


HOMO ERECTUS
NICKNAME: UPRIGHT MAN



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: All over Asia (+5)
- Survival: ~2 million to ~50,000 (+7)
- Characteristic: The longest surviving human species (+8)
- Strength: First to use fire and make hunting weapons... (+4)
- Weakness: They made the same weapons for hundreds of thousands of years (+1)


HOMO NEANDERTHALENSIS
NICKNAME: NEANDERTHAL MAN



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: Europe and Western Asia (+6)
- Survival: ~300,000 to ~30,000 (+3)
- Characteristic: Very big brain, very muscular. (+4)
- Strength: Resistant to ice-age climate. Looked after the old and the disabled. (+6)
- Weakness: Terrible at public relations. Favorite butt of cartoon jokes. (-1)


HOMO LUZONENSIS
NICKNAME: MAN FROM LUZON ISLAND



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: Luzon, Philippines (+1)
- Survival: ~700,000 to ~50,000 (+5)
- Characteristic: The new kids on the block, discovered only in 2019 (+1)
- Strength: Adapted to tropical forests (+6)
- Weakness: Total lack of public relations. (-2)

HOMO DENISOVA
NICKNAME: THE DENISOVANS



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: Siberia, East Asia (+3)
- Survival: ~300,000 to ~50,000 (+2)
- Characteristic: The mystery man. Originally identified from just one fossilized finger (+2)
- Strength: Very sociable. Slept around with Sapiens and Neanderthals (+5)
- Weakness: Stuck their fingers into strange places. (-1)


HOMO SAPIENS
NICKNAME: WISE MAN



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: Everywhere, even on the moon (+10)
- Survival: ~300,000 to right now. May die out by 2100 (+4)
- Characteristic: Think they're smarter than everybody else. (+0)
- Strength: Good at making tools. From toothbrushes to intercontinental nuclear missiles. (+10)
- Weakness: Huge ego. Often happy to believe nonsense. (-3)

HOMO FLORESIENSIS
NICKNAME: FLORES MAN, THE "HOBBIT"



THE HUMAN FAMILY 50,000 YEARS AGO

- Location: Island of Flores, Indonesia (+1)
- Survival: ~800,000 to ~50,000 (+3)
- Characteristic: Dwarf species. About 1 meter tall and weighing 25 kg. (+2)
- Strength: Hunted the island's dwarf elephants and giant lizards. (+4)
- Weakness: Stay at home type. Never left the island. (+1)





WOOPS! I THINK THAT'S THE WRONG SLIDE!



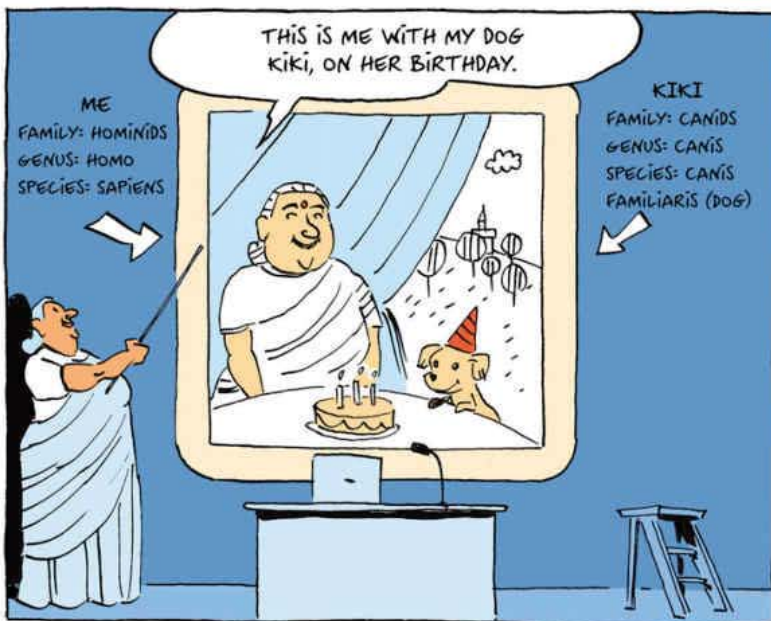
I THOUGHT I CHECKED THESE... MY SUMMER HOLIDAY SNAPS SHOULDN'T BE IN THIS FILE.

DARN! THEY'RE ALL MIXED UP!



IT DOESN'T MATTER. THIS PHOTO IS ACTUALLY VERY USEFUL.

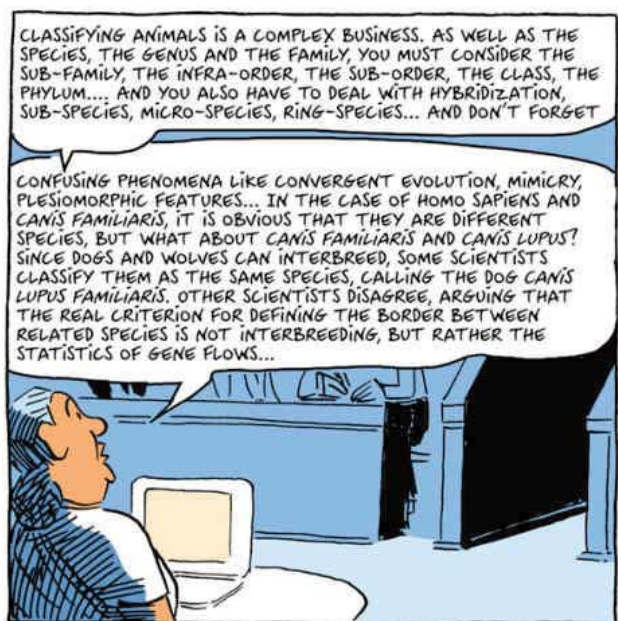
JUST LET ME WRITE A FEW POINTS ON THE BOARD.



THIS IS ME WITH MY DOG KIKI, ON HER BIRTHDAY.

ME
FAMILY: HOMINIDS
GENUS: HOMO
SPECIES: SAPIENS

KIKI
FAMILY: CANIDS
GENUS: CANIS
SPECIES: CANIS FAMILIARIS (DOG)



CLASSIFYING ANIMALS IS A COMPLEX BUSINESS. AS WELL AS THE SPECIES, THE GENUS AND THE FAMILY, YOU MUST CONSIDER THE SUB-FAMILY, THE INFRA-ORDER, THE SUB-ORDER, THE CLASS, THE PHYLUM... AND YOU ALSO HAVE TO DEAL WITH HYBRIDIZATION, SUB-SPECIES, MICRO-SPECIES, RING-SPECIES... AND DON'T FORGET

CONFUSING PHENOMENA LIKE CONVERGENT EVOLUTION, MIMICRY, PLESIOMORPHIC FEATURES... IN THE CASE OF HOMO SAPIENS AND CANIS FAMILIARIS, IT IS OBVIOUS THAT THEY ARE DIFFERENT SPECIES, BUT WHAT ABOUT CANIS FAMILIARIS AND CANIS LUPUS? SINCE DOGS AND WOLVES CAN INTERBREED, SOME SCIENTISTS CLASSIFY THEM AS THE SAME SPECIES, CALLING THE DOG CANIS LUPUS FAMILIARIS. OTHER SCIENTISTS DISAGREE, ARGUING THAT THE REAL CRITERION FOR DEFINING THE BORDER BETWEEN RELATED SPECIES IS NOT INTERBREEDING, BUT RATHER THE STATISTICS OF GENE FLOWS...



I DIDN'T REALLY GET ALL THAT. SCIENCE IS WAY COMPLICATED...

IT SURE IS! I'M LOST TOO...



EXCUSE ME, PROFESSOR, COULD YOU SIMPLIFY THINGS A LITTLE SO THAT EVEN A HISTORIAN CAN FOLLOW WHAT YOU'RE SAYING? IT WOULD HELP OTHER PEOPLE TOO, LIKE MY NIECE...

OH, FORGIVE ME! I FORGOT ABOUT YOU TWO. OF COURSE, I'LL TRY TO MAKE IT SIMPLER!



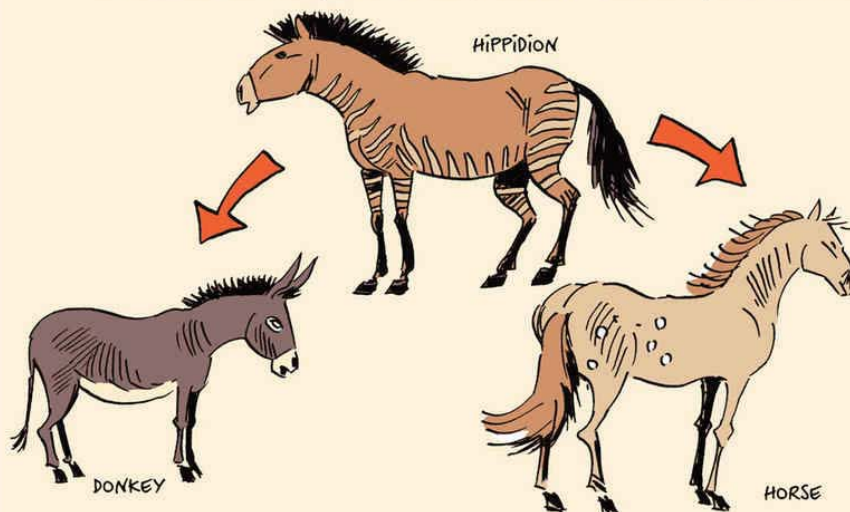
NOW WE'LL GET SOME ANSWERS!

SO, AS I WAS SAYING... APART FROM THE FACT THAT WE'RE BOTH MAMMALS, ANYONE CAN SEE THAT KIKI AND I DON'T HAVE A WHOLE LOT

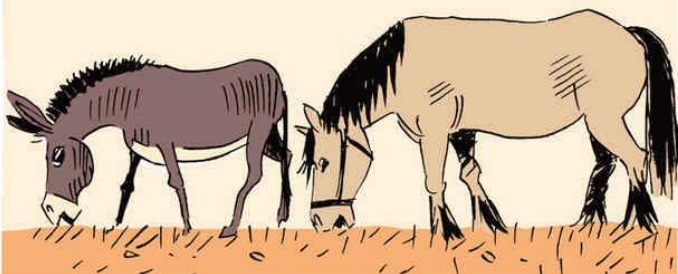
IN COMMON. WE'RE NOT THE SAME SPECIES. WE DON'T EVEN BELONG TO THE SAME FAMILY!



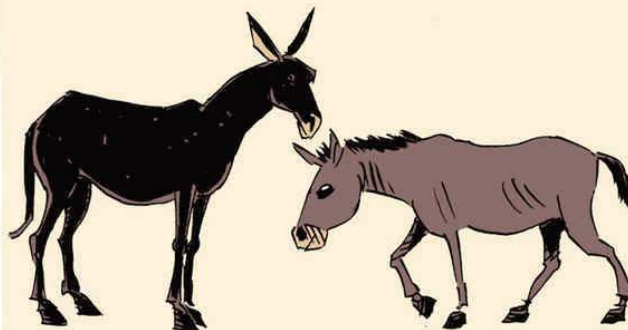
ON THE OTHER HAND, THIS DONKEY AND THIS HORSE HAVE A LOT OF CHARACTERISTICS IN COMMON. IN FACT, THEY SHARE A RECENT ANCESTOR, THE HIPPIDION.



ANIMALS BELONG TO THE SAME SPECIES IF THEY TEND TO MATE NATURALLY AND PRODUCE FERTILE OFFSPRING. BUT THIS MARE AND THIS DONKEY DON'T SEEM TO BE THAT INTO EACH OTHER...



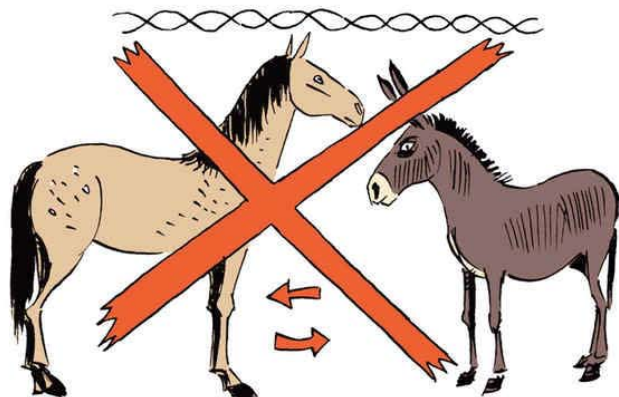
THEY WILL MATE IF YOU INDUCE THEM, BUT THEY'LL PRODUCE MULES AND HINNIES, WHICH ARE STERILE.



THE MULE: THE RESULT OF MATING A JACK DONKEY WITH A MARE.

THE HINNY: THE RESULT OF MATING A STALLION WITH A JENNY DONKEY.

THIS MEANS THAT MUTATIONS IN DONKEY DNA CAN'T CROSS OVER TO HORSES, OR VICE VERSA. SO THESE TWO ANIMALS ARE CONSIDERED TWO DISTINCT SPECIES, MOVING ALONG SEPARATE EVOLUTIONARY PATHS. AS MORE MUTATIONS OCCUR, THEY'LL BECOME INCREASINGLY DIFFERENT.



AH! IT'S KIKI AGAIN— ANOTHER SLIP-UP... BUT IT'S JUST WHAT WE NEED!



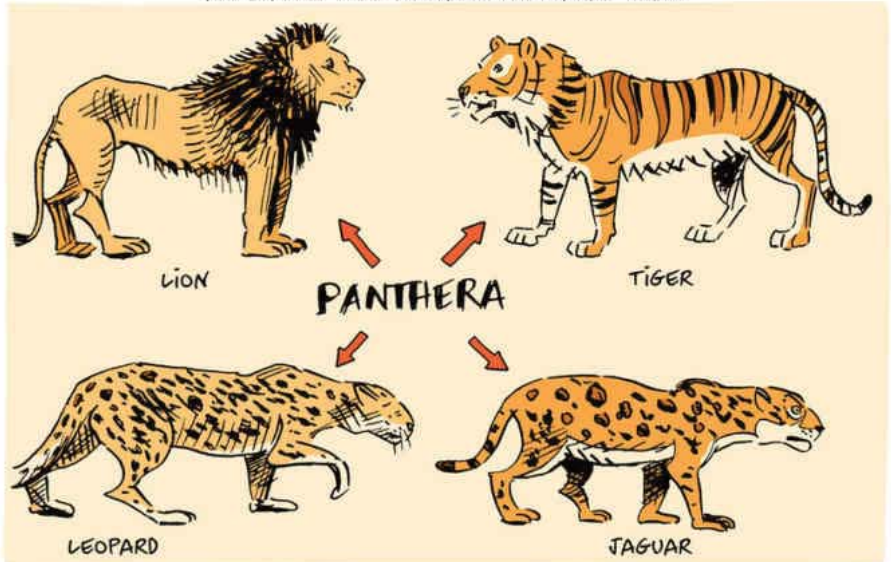
SEE HOW DIFFERENT KIKI AND THIS BULLDOG LOOK. YET THEY'RE MEMBERS OF THE SAME SPECIES AND THEY SHARE THE SAME DNA POOL.



THEY WILL HAPPILY MATE, AND THEIR PUPPIES WILL GROW UP TO PAIR OFF WITH OTHER DOGS AND HAVE PUPPIES OF THEIR OWN.

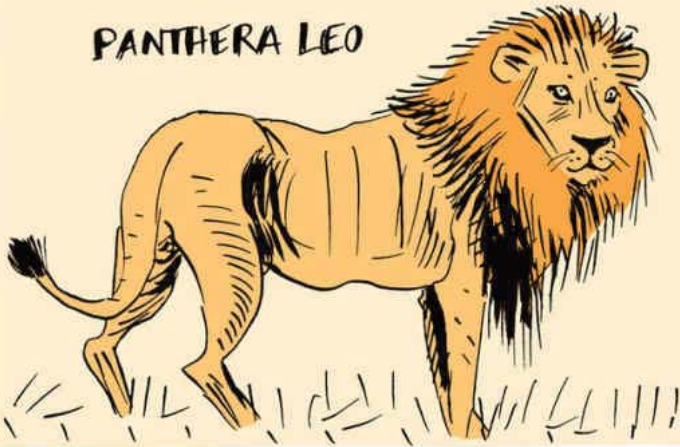


CLOSELY RELATED SPECIES THAT EVOLVED FROM A COMMON ANCESTOR ARE BUNCHED TOGETHER UNDER THE HEADING "GENUS"

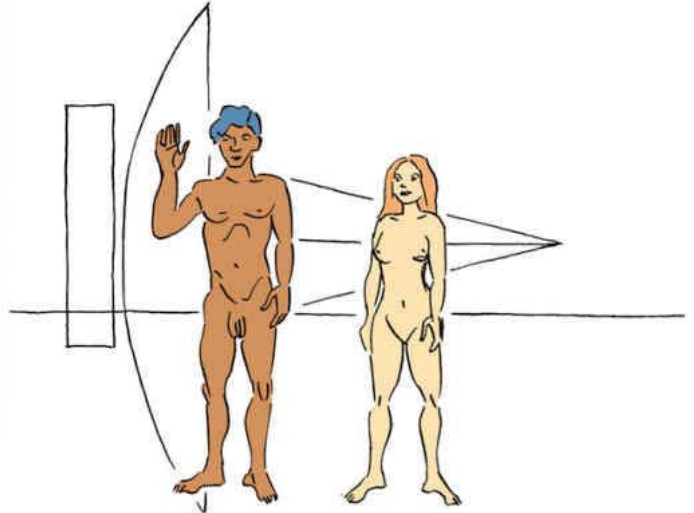


WE BIOLOGISTS LABEL ORGANISMS WITH A TWO-PART LATIN NAME, FIRST THE GENUS THEN THE SPECIES. LIONS, FOR EXAMPLE, ARE CALLED PANTHERA LEO, THE SPECIES LEO OF THE GENUS PANTHERA.

PANTHERA LEO



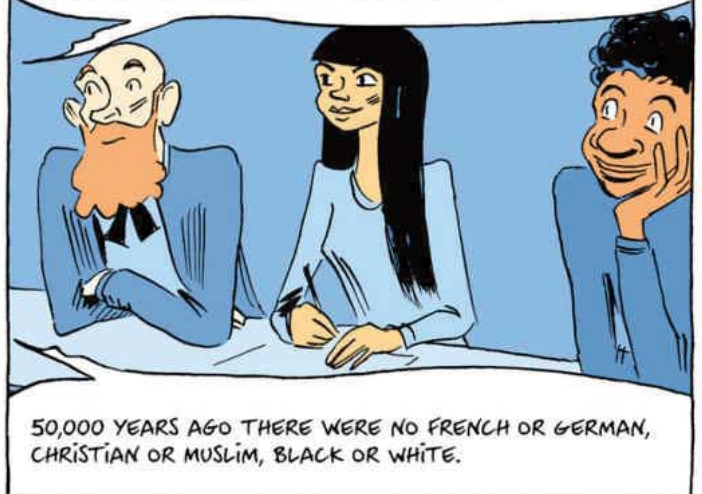
ALL THE PEOPLE IN THIS AMPHITHEATER ARE HOMO SAPIENS: WE'RE OF THE GENUS HOMO, WHICH MEANS "HUMAN," AND THE SPECIES SAPIENS WHICH MEANS "WISE."



IN TODAY'S WORLD, PEOPLE MAY LOOK VERY DIFFERENT. SOME HAVE DARK SKIN, OTHERS HAVE LIGHT SKIN. SOME HAVE STRAIGHT HAIR, OTHERS HAVE CURLY HAIR. SOME ARE VERY TALL, OTHERS ARE SHORT.



ALL THE DISTINCTIONS THAT SEEM SO IMPORTANT TODAY—FRENCH AND GERMAN, CHRISTIAN AND MUSLIM, BLACK AND WHITE—ARE VERY RECENT INVENTIONS, AND THEY DON'T HAVE MUCH INFLUENCE ON HUMAN EVOLUTION.



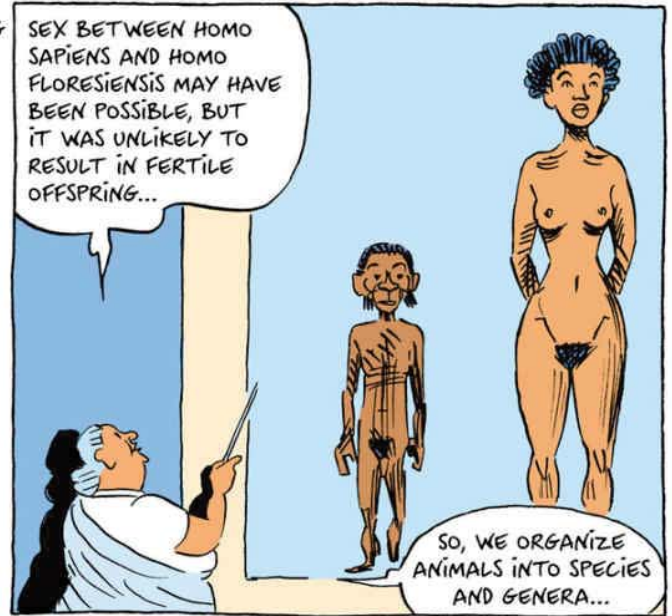
TODAY, A WHITE CHRISTIAN GERMAN MAN CAN BE IN A SEXUAL RELATIONSHIP WITH A BLACK MUSLIM FRENCH WOMAN, AND HAVE CHILDREN WHO WILL PASS ON THEIR COMBINED GENETIC CODES TO FUTURE GENERATIONS.



WE'RE NOW THE ONLY REMAINING SPECIES OF THE GENUS HOMO. BUT THERE WERE ONCE MANY OTHERS, LIKE THE DWARF HOMO FLORESIENSIS. THEIR NAME MEANS "HUMAN FROM FLORES ISLAND."



SEX BETWEEN HOMO SAPIENS AND HOMO FLORESIENSIS MAY HAVE BEEN POSSIBLE, BUT IT WAS UNLIKELY TO RESULT IN FERTILE OFFSPRING...



...THEN WE GROUP THE GENERA INTO FAMILIES.

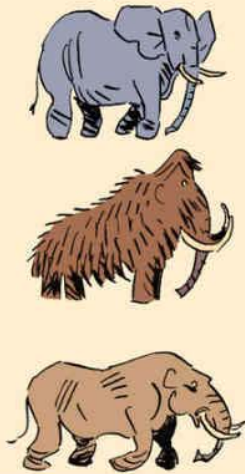
THE CAT FAMILY



THE DOG FAMILY

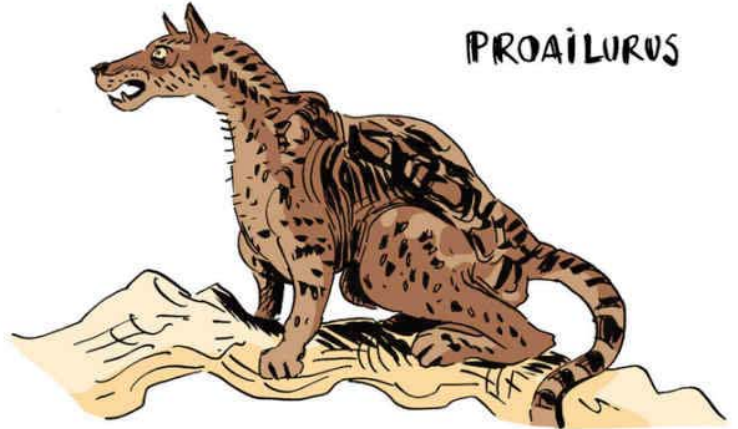


THE ELEPHANT FAMILY



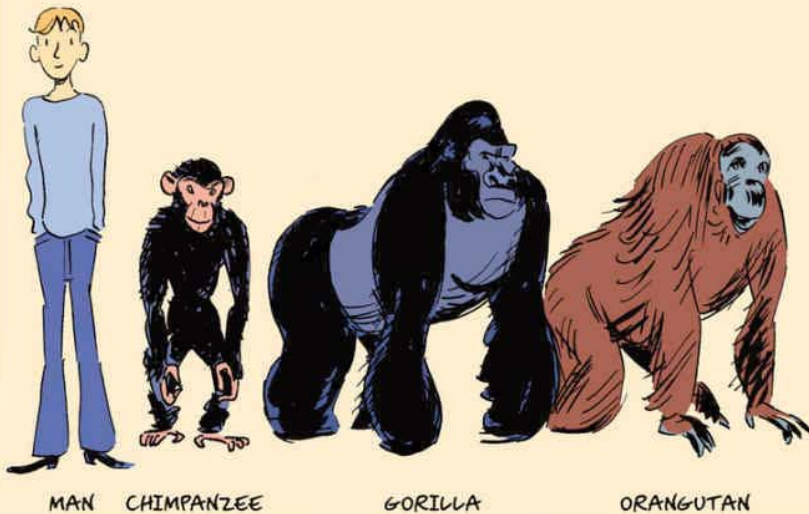
ALL MEMBERS OF A PARTICULAR FAMILY CAN TRACE THEIR LINEAGE BACK TO A FOUNDING MATRIARCH OR PATRIARCH.

PROAILURUS



FOR EXAMPLE, THE SMALL HOUSECAT AND THE GIANT LION HAVE A COMMON FELINE ANCESTOR—THE PROAILURUS—THAT LIVED ABOUT 25 MILLION YEARS AGO.

HUMANS BELONG TO A FAMILY TOO—THE FAMILY OF GREAT APES.



HUMANS BELONG TO THE FAMILY OF GREAT APES...

A FEW CENTURIES AGO, THE PROFESSOR WOULD HAVE BEEN BURNED AT THE STAKE FOR SAYING THAT. AND THIS BOOK WOULD DEFINITELY HAVE BEEN GIVEN THE SAME TREATMENT...



THE FACT THAT HUMANS HAVE A FAMILY USED TO BE ONE OF HISTORY'S MOST CLOSELY GUARDED SECRETS. FOR A LONG TIME HOMO SAPIENS LIKED TO SEE THEMSELVES AS SET APART FROM OTHER ANIMALS. AN ORPHAN WITH NO FAMILY, NO BROTHERS OR SISTERS, NO COUSINS



AND DEFINITELY NO PARENTS.

BUT LIKE IT OR NOT, WE HAVE A BIG—AND NOISY!—FAMILY.



OUR CLOSEST RELATIVES ARE THE CHIMPANZEES. THIS COULD BE WHAT HAPPENED, SIX MILLION YEARS AGO.



WHAT BEAUTIFUL CHILDREN YOU HAVE...

SIX MILLION YEARS AGO, THIS FEMALE APE HAD TWO DAUGHTERS.



ONE IS THE ANCESTOR OF ALL CHIMPANZEES.



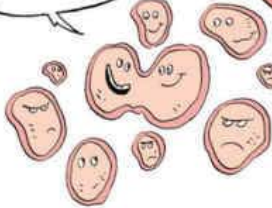
AND THIS ONE IS OUR GRANDMOTHER...

SEASON 6

PREVIOUSLY, IN SEASON 1

MULTICELLULAR ORGANISMS INVENT SEX FOR THE FIRST TIME!

THAT FIRST KISS WAS UNFORGETTABLE!

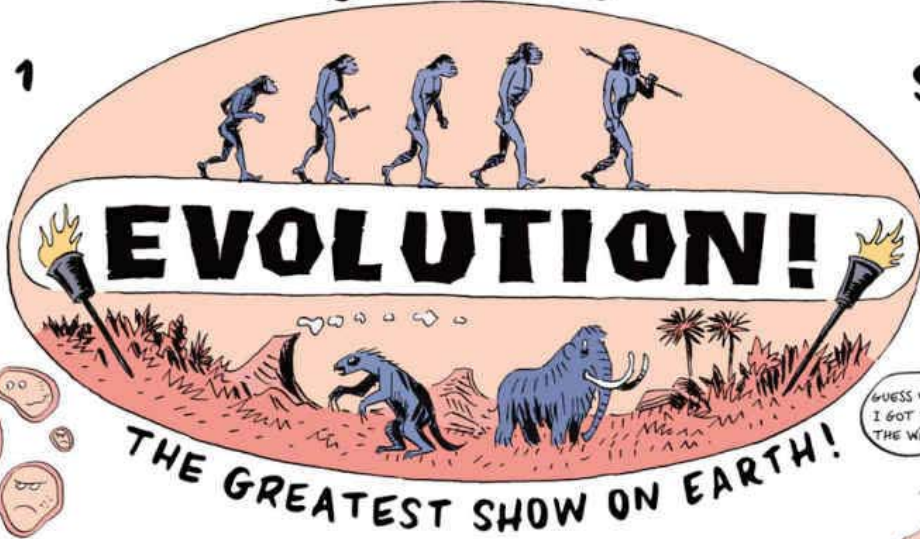
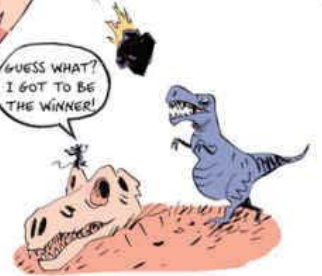


PREVIOUSLY, IN SEASON 3

EXTINCTION OF THE DINOSAURS!

EVERYBODY THOUGHT T. REX WOULD SLAY THE COMPETITION THIS SEASON! BUT NOBODY SAW THAT ASTEROID COMING, RIGHT?

GUESS WHAT? I GOT TO BE THE WINNER!



THE GREATEST SHOW ON EARTH!

APPROXIMATELY TWO MILLION YEARS AGO.

WELCOME TO THE NEW SEASON OF EVOLUTION, THE GREATEST SHOW ON EARTH!

YOU ARE OUR NINE COUPLES OF HUMAN ADVENTURERS WHO'VE RISEN TO THE CHALLENGE OF LEAVING YOUR HOME IN AFRICA TO COLONIZE NEW, UNCHARTED TERRITORIES. TO SUCCEED, YOU'LL HAVE TO ADAPT TO DIFFERENT CLIMATES, LANDSCAPES AND FOOD!

THE FIRST EPISODE BEGINS IN YOUR BACKYARD, EAST AFRICA.

YOU ALL START ON AN EQUAL FOOTING—YOU'RE ALL HUMAN BEINGS.

YOU'VE ALL MADE THE BRAVE DECISION TO LEAVE FAMILIAR TERRITORY BEHIND. BUT, MAKE NO MISTAKE, BY THE END OF THIS SEASON YOU WILL HAVE CHANGED. THE MANY CHALLENGES YOU ENCOUNTER WILL ALTER YOUR DNA, YOUR BODY AND YOUR BRAIN. GENERATION AFTER GENERATION, YOUR LINEAGE WILL EVOLVE IN RESPONSE TO CHANGES IN FOOD AND CLIMATE... YOU WILL BECOME DIFFERENT SPECIES.

EVERYONE READY? ON YOUR MARK, GET SET, GO!



JOIN US AGAIN IN TWO MILLION YEARS, TO SEE WHO WILL WIN THIS NEW SEASON OF EVOLUTION, THE GREATEST SHOW ON EARTH!!!



OUCH! WE ALREADY HAVE OUR FIRST ACCIDENT!



SO TELL ME, LUCY, WHAT HAPPENED?

OH DEAR, THAT'S A NASTY SPRAIN, YOUR POOR ANKLE!

WELL, I'M AFRAID THE ADVENTURE'S OVER FOR YOU ALREADY, LUCY. GUESS YOU'LL BE STAYING HERE IN ETHIOPIA...



IS THAT REALLY HOW IT HAPPENED, UNCLE YUVAL?

NO, NOT EXACTLY. DON'T BELIEVE EVERYTHING YOU SEE ON TV... THIS SHOW MAKES EVOLUTION LOOK LIKE A COMPETITION BETWEEN COUPLES. IN REAL LIFE THE FOUNDING POPULATION OF A SPECIES WAS ALWAYS MUCH LARGER. HUMANS LIVED IN GROUPS RATHER THAN PAIRS. I GUESS THE SHOW DOESN'T HAVE THE BUDGET FOR THAT....

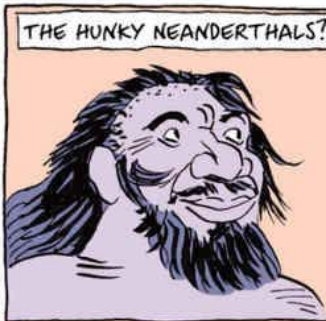


AND THE FAMOUS LUCY DOESN'T BELONG HERE AT ALL! SHE WAS AN AUSTRALOPITHECUS. SHE DIED A MILLION YEARS BEFORE THE FIRST HUMANS APPEARED...

AND NOW, A SHORT BREAK FOR ADS. DON'T GO AWAY! WE'LL BE RIGHT BACK WITH YOU IN A MILLION YEARS!

WHO WILL WIN
SEASON 6
OF
EVOLUTION!

THE GREATEST
SHOW ON EARTH!



THE HUNKY NEANDERTHALS?



THE CUNNING DWARVES FROM FLORES ISLAND?



THE MYSTERIOUS DENISOVANS FROM SIBERIA?



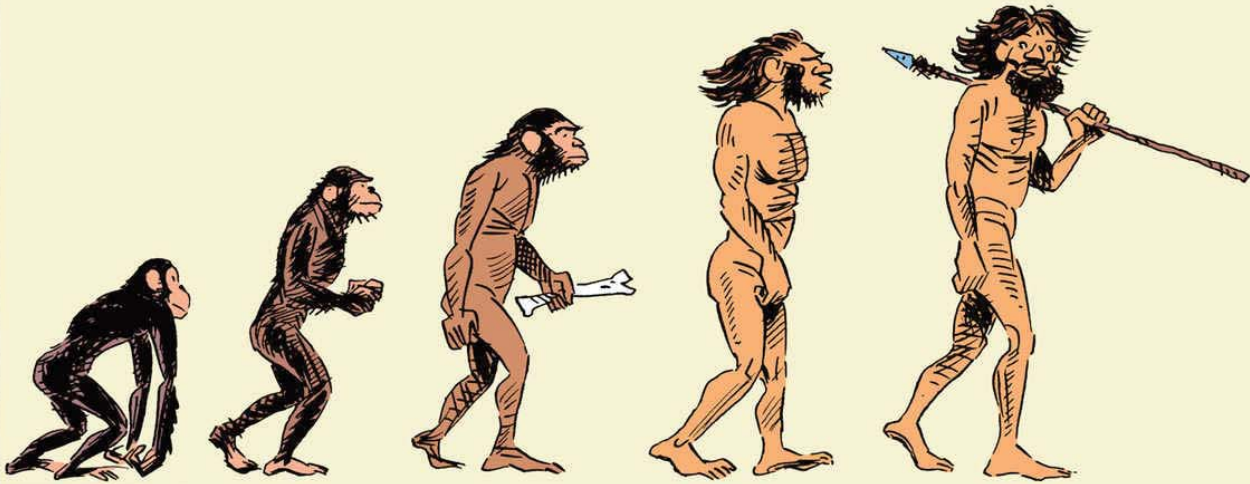
STAY WITH US TO FIND OUT!



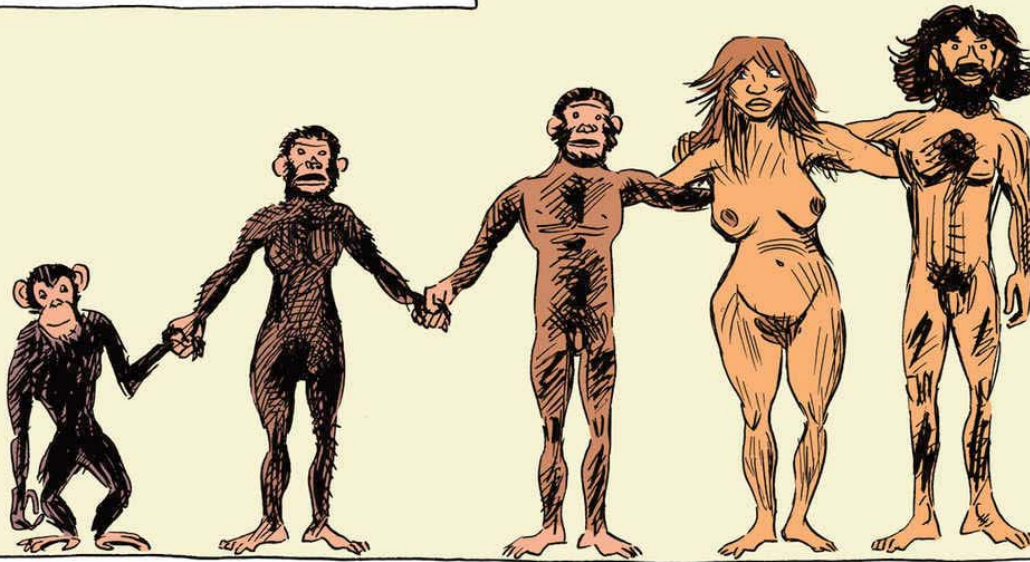
I ALREADY KNOW HOW THE SEASON ENDS! HOMO SAPIENS WINS AND ALL THE OTHER SPECIES DISAPPEAR!

SPOILER ALERT

THIS FAMOUS PICTURE IS SO MISLEADING! IT MAKES IT LOOK LIKE THERE WAS NEVER MORE THAN ONE HUMAN SPECIES ON EARTH AT A TIME!



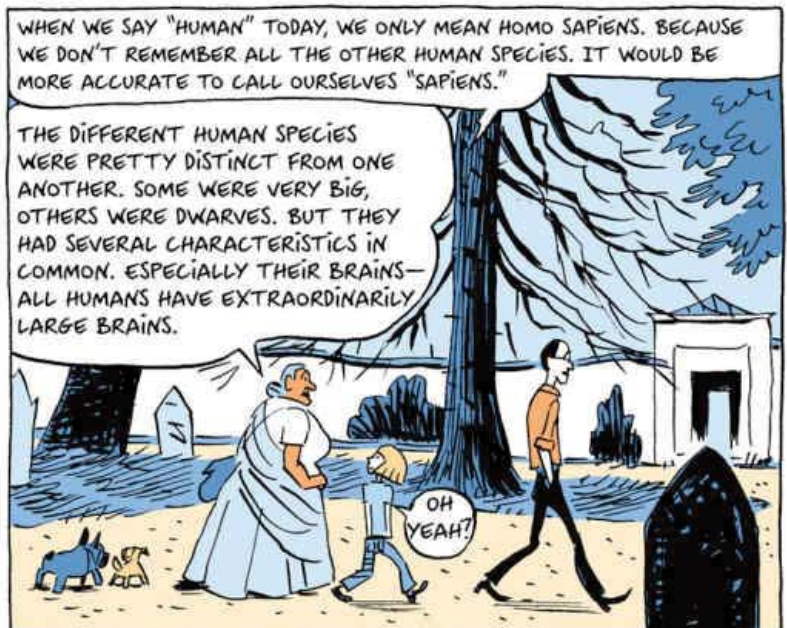
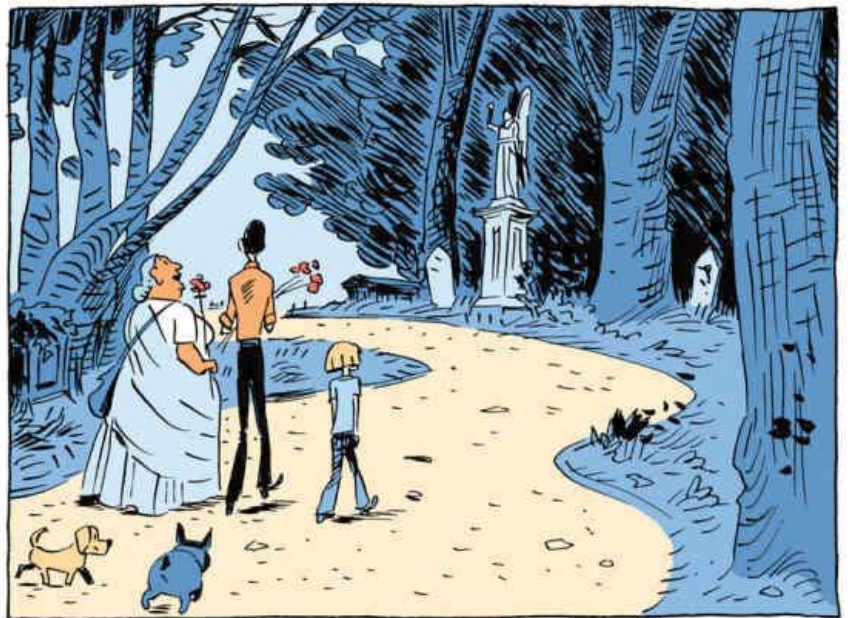
THIS WOULD BE NEARER THE TRUTH.

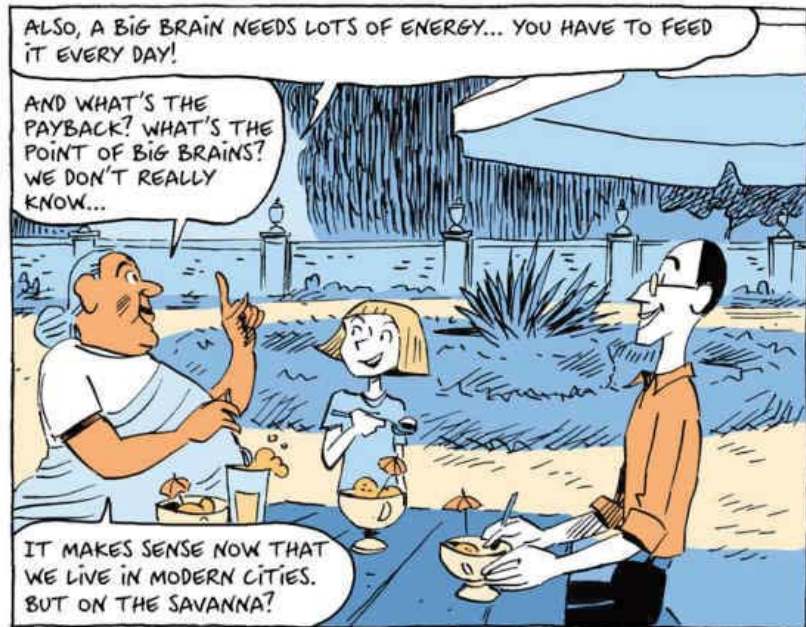
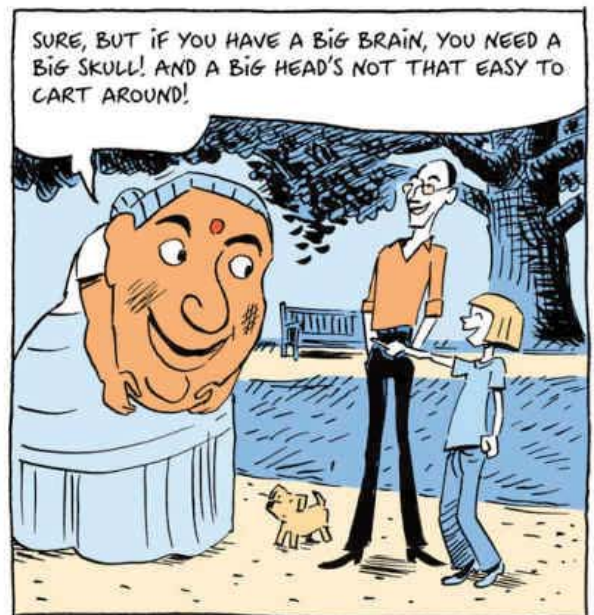
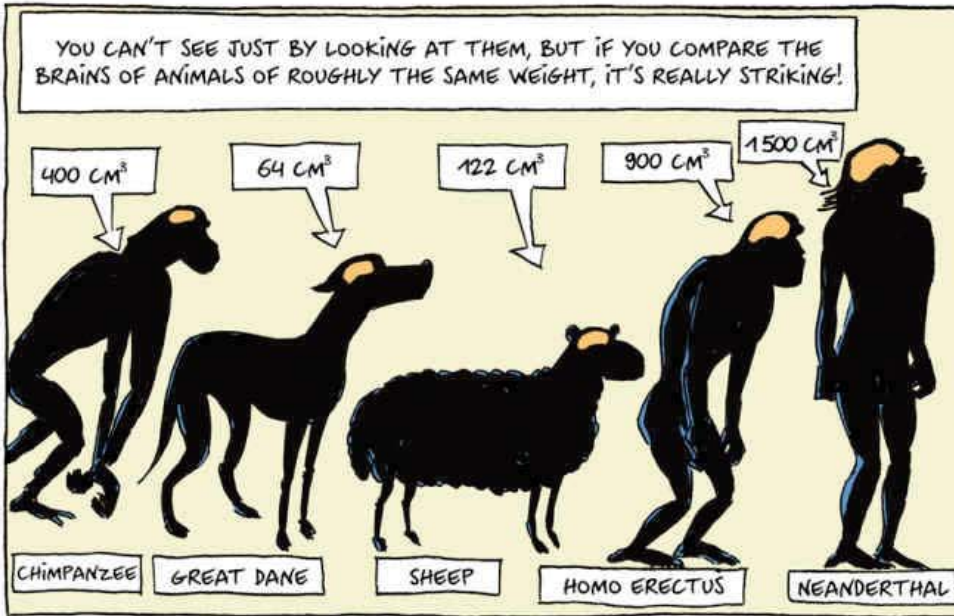


SO HOW COME THERE'S ONLY ONE HUMAN SPECIES TODAY?

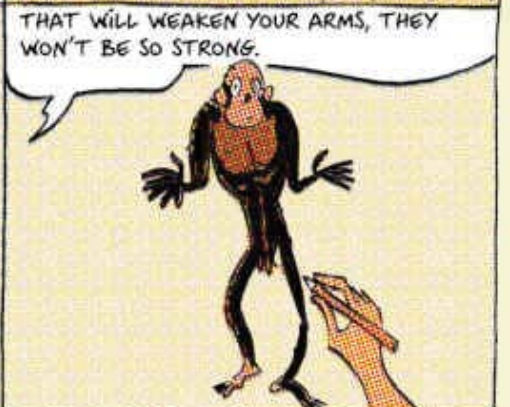
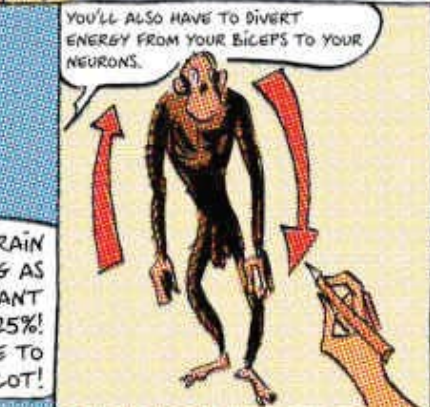
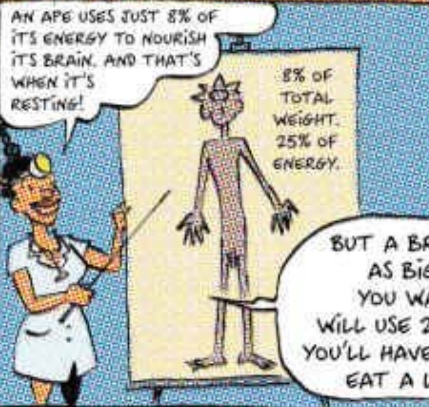
IT'S VERY STRANGE... MAYBE EVEN SUSPICIOUS. WE SAPIENS ARE TOO COMFORTABLE WITH BEING THE ONLY HUMAN SPECIES AROUND...

MAYBE WE HAVE GOOD REASONS TO REPRESS MEMORIES OF OUR BROTHERS AND SISTERS.

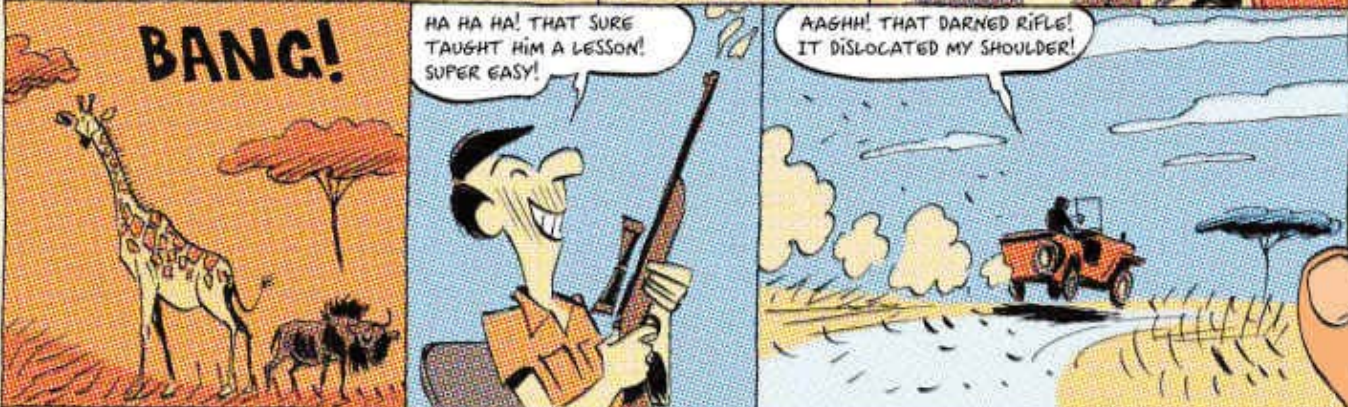
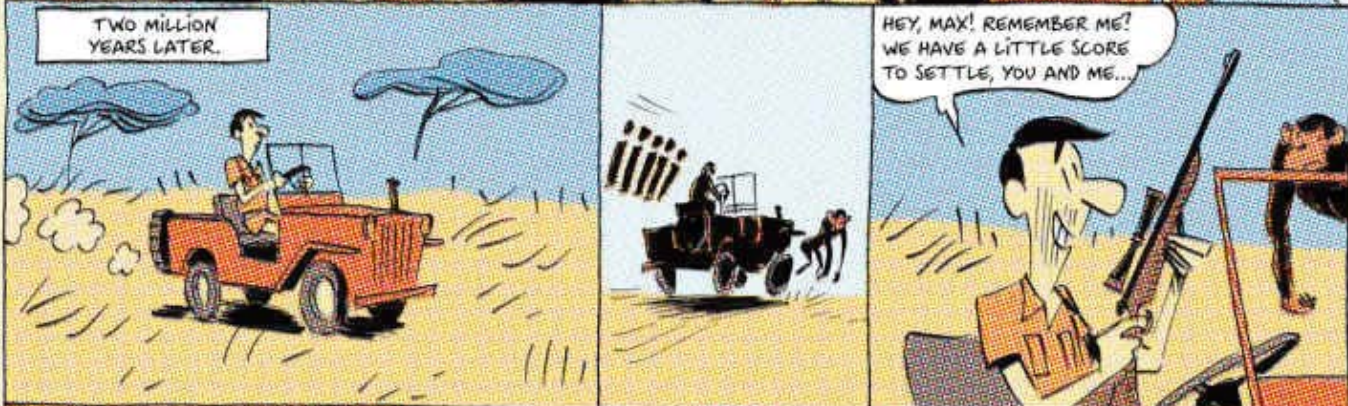
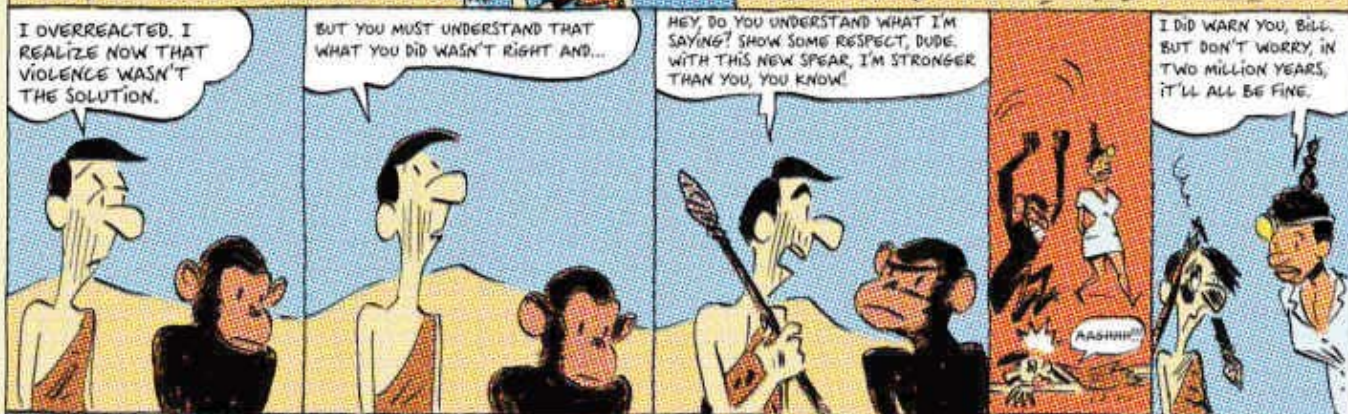
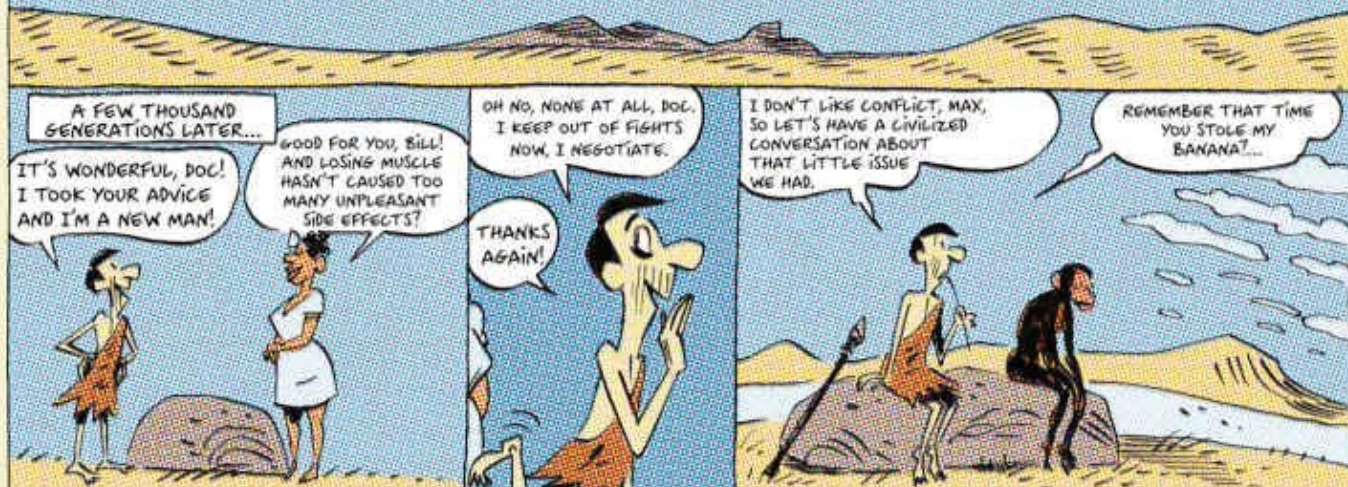


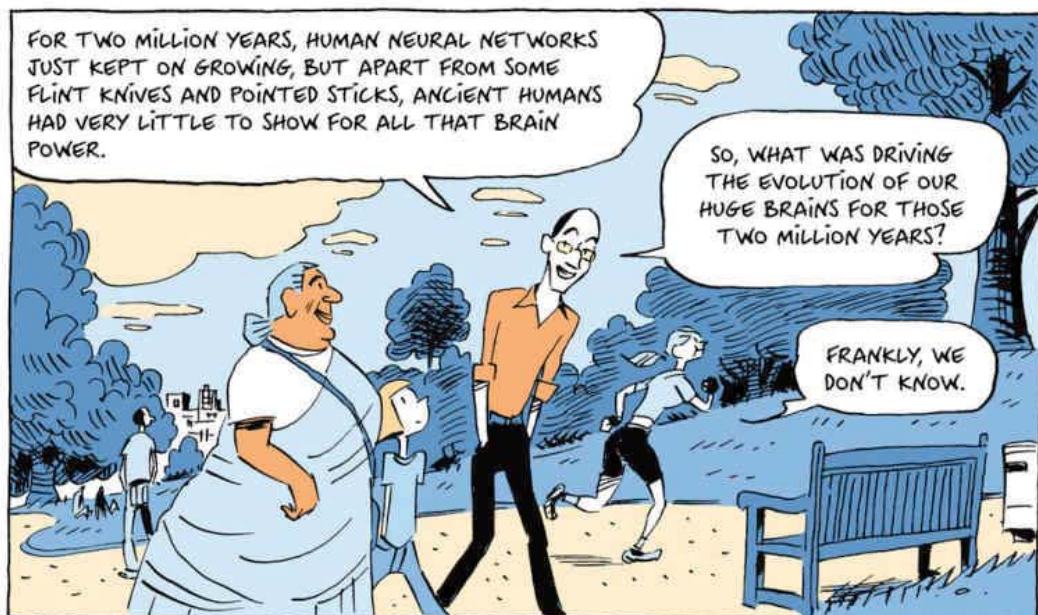


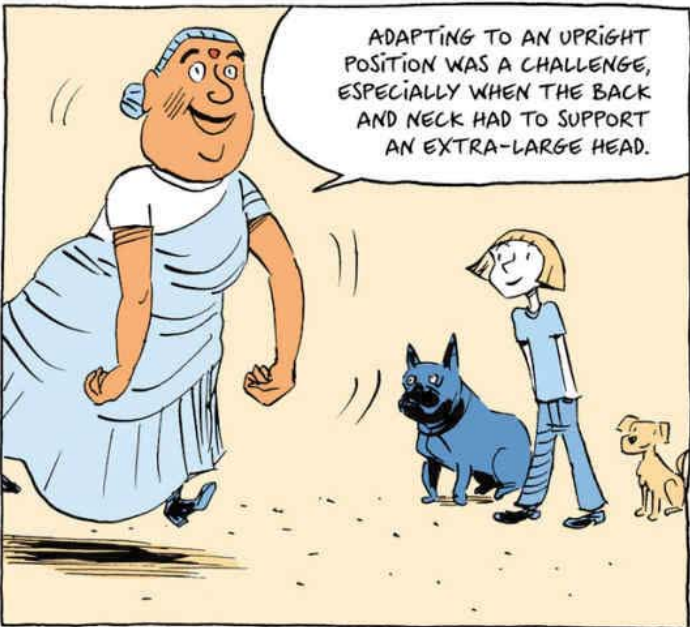
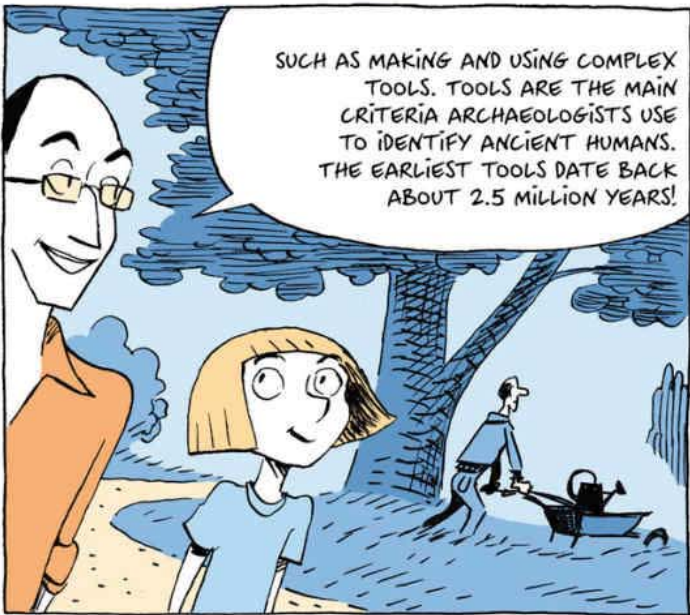
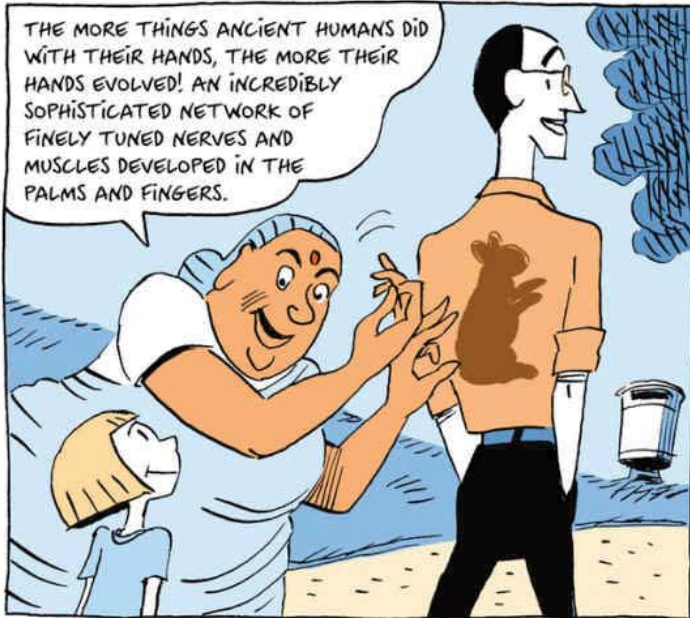
PREHISTORIC BILL

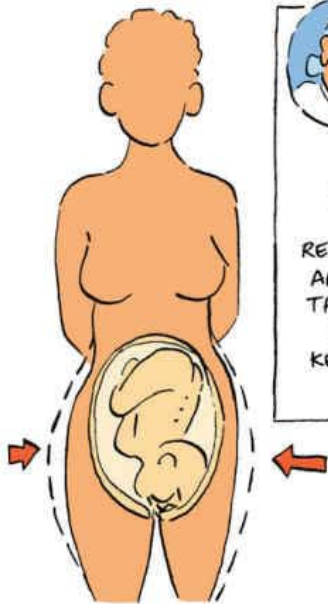



THINKING AIN'T FREE!



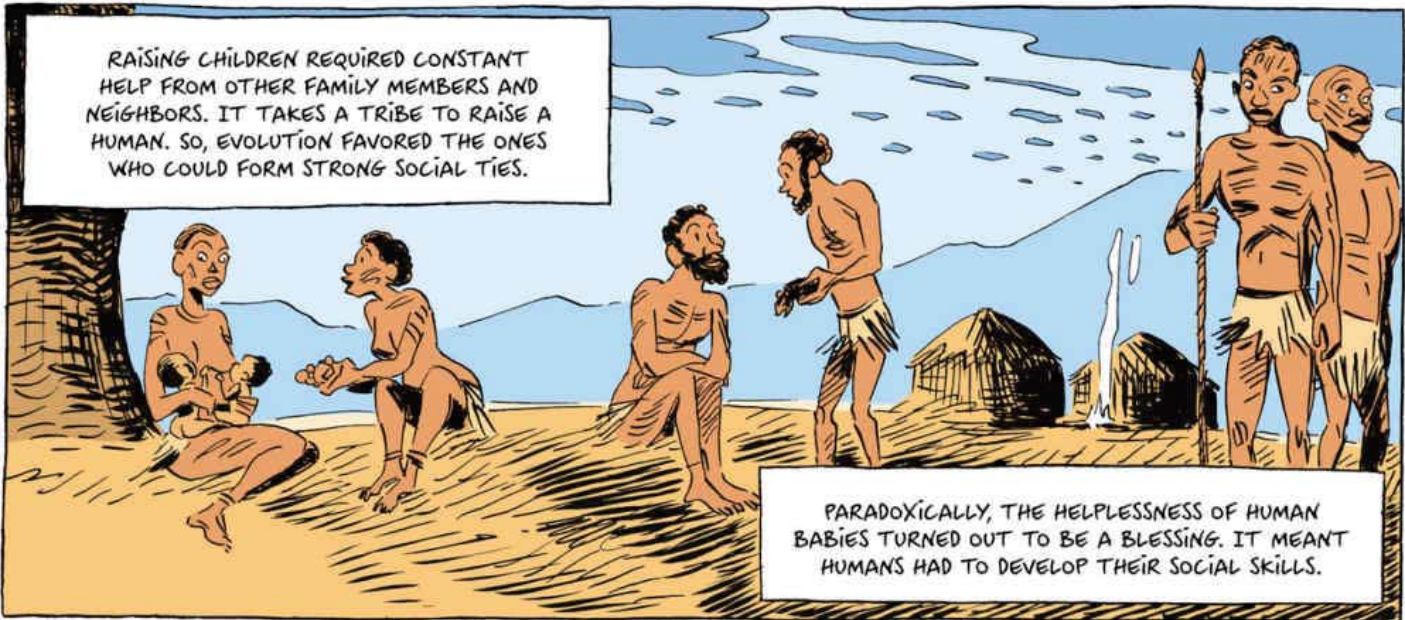
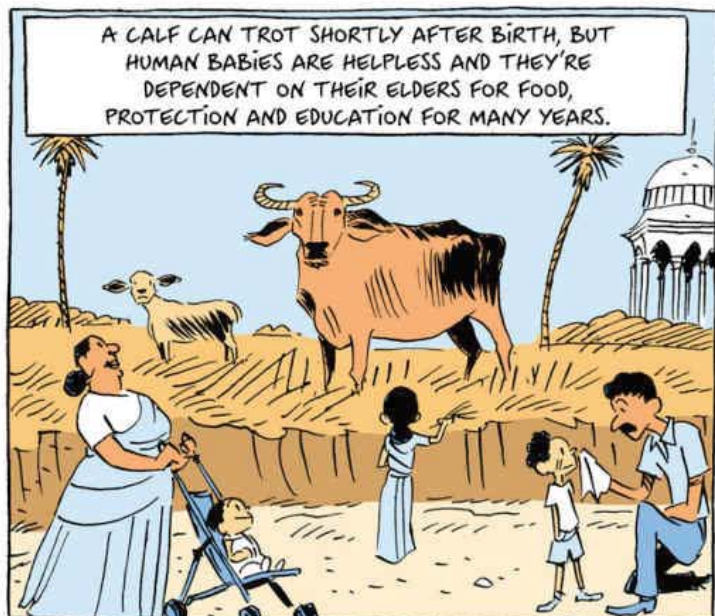
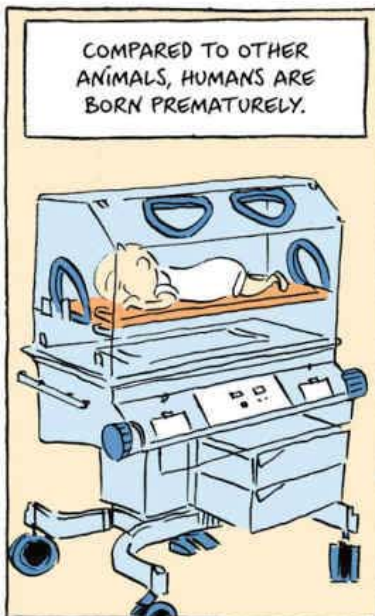
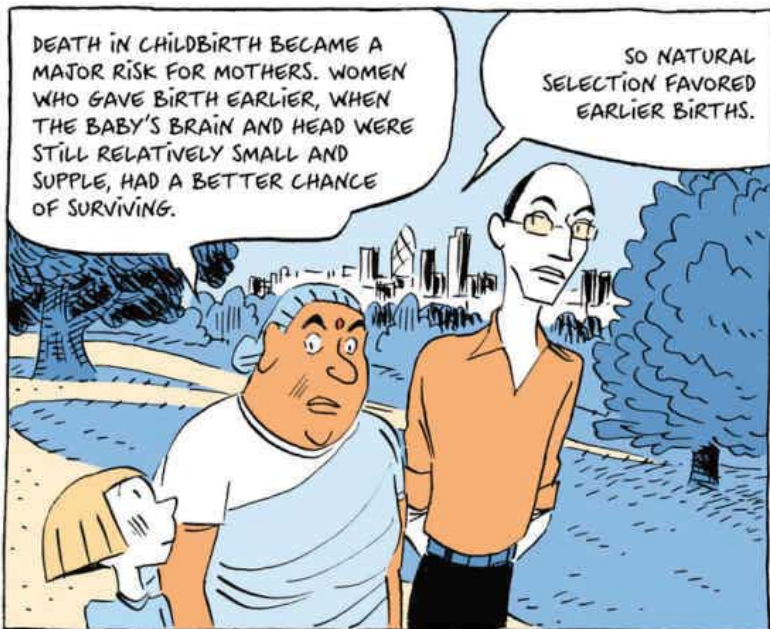








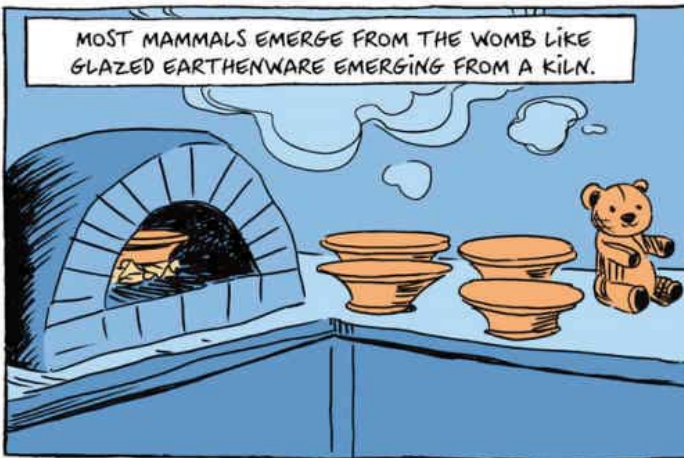
WOMEN PAID EXTRA. WALKING UPRIGHT REQUIRED NARROWER HIPS, AND THAT CONSTRICTED THE BIRTH CANAL—JUST WHEN BABIES' HEADS KEPT GETTING BIGGER.



BECAUSE HUMANS ARE BORN UNDERDEVELOPED, THEY CAN BE EDUCATED AND SOCIALIZED FAR MORE THAN ANY OTHER ANIMAL.



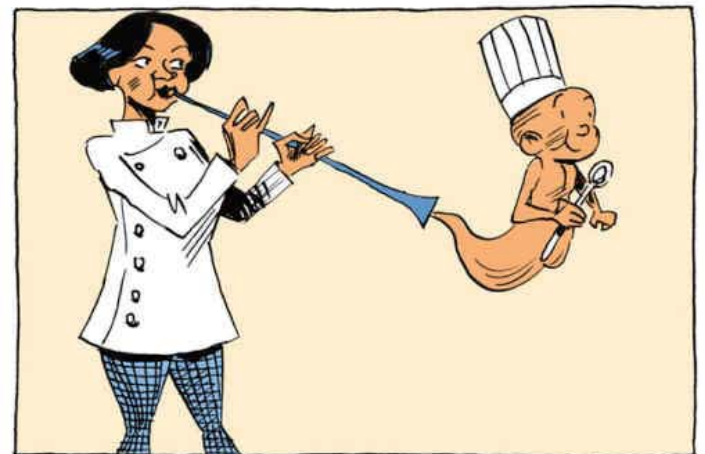
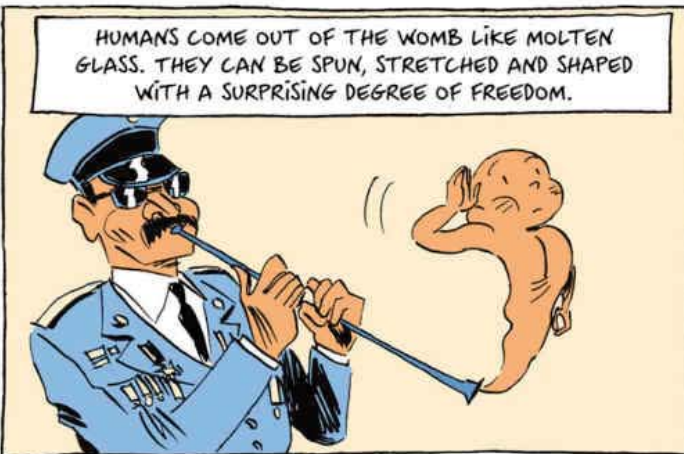
MOST MAMMALS EMERGE FROM THE WOMB LIKE GLAZED EARTHENWARE EMERGING FROM A KILN.



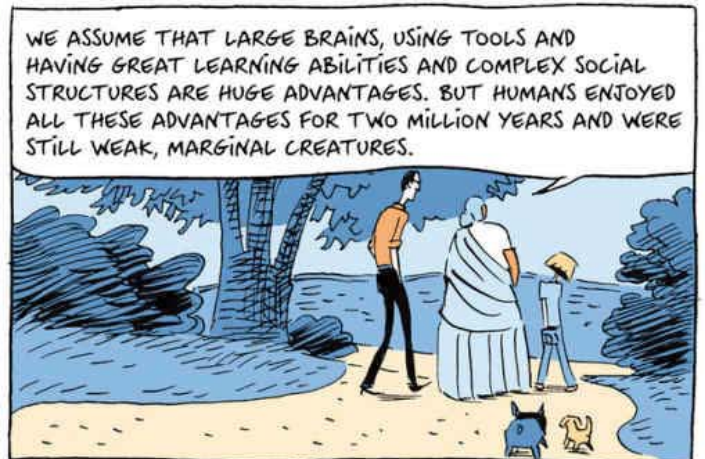
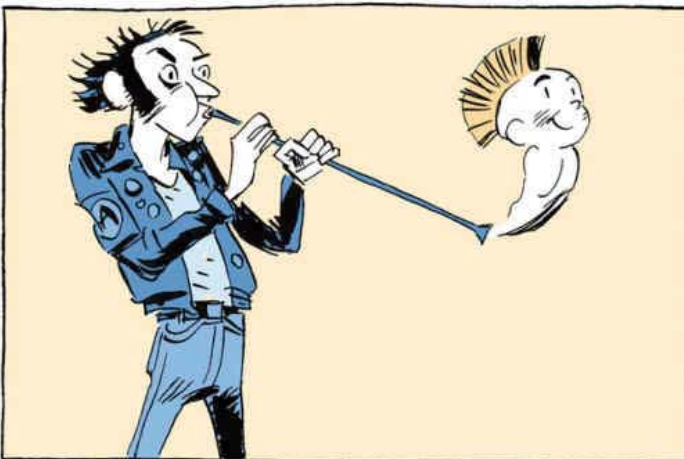
ANY ATTEMPT AT REMOLDING THEM WILL ONLY SCRATCH OR BREAK THEM.



HUMANS COME OUT OF THE WOMB LIKE MOLTEN GLASS. THEY CAN BE SPUN, STRETCHED AND SHAPED WITH A SURPRISING DEGREE OF FREEDOM.



WE ASSUME THAT LARGE BRAINS, USING TOOLS AND HAVING GREAT LEARNING ABILITIES AND COMPLEX SOCIAL STRUCTURES ARE HUGE ADVANTAGES. BUT HUMANS ENJOYED ALL THESE ADVANTAGES FOR TWO MILLION YEARS AND WERE STILL WEAK, MARGINAL CREATURES.



PREHISTORIC BILL



YOU HAVE WON THE JACKPOT!

INSIDE

A COMPLETE "KING OF THE FOOD CHAIN" KIT.

1300 LBS BRAIN FULLY EQUIPPED TOOLBOX AND LOTS OF FRIENDS. VALID FOR TWO.



HONEY, YOU'LL NEVER GUESS!

OH NO! NOT AGAIN!

DOES IT SUIT ME? IT DOESN'T MAKE ME LOOK TOO SLIM?

NOT AT ALL, BABE, YOU LOOK FANTASTIC.



ONE MILLION YEARS LATER...

ARE YOU SURE ABOUT THAT?!

I'M SICK OF EATING INSECTS AND LEFTOVERS!

DON'T YOU TWO START!

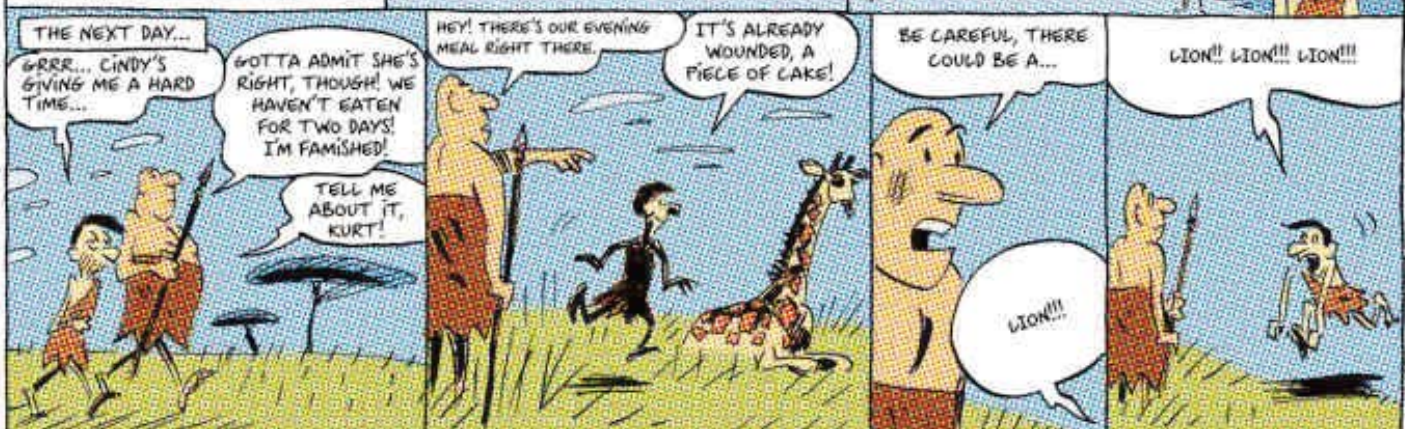
I'M FREEZING!!!

SAY, BILL...

WHAT HAPPENED TO THE LOVELY SET OF STONE KNIVES I MADE FOR YOUR BIRTHDAY? WHY DON'T YOU GO TRY THEM OUT WITH YOUR FRIENDS?

MAKE YOURSELF USEFUL AND BRING HOME SOME MEAT INSTEAD OF GROUCHING!

OH, HONEY, THANKS TO THIS WINNING TICKET WE CAN BE THE MOST POWERFUL ANIMALS ON EARTH! WE'LL CONQUER THE WHOLE PLANET IN A FLASH!



THE NEXT DAY...

GRRR... CINDY'S GIVING ME A HARD TIME...

GOTTA ADMIT SHE'S RIGHT, THOUGH! WE HAVEN'T EATEN FOR TWO DAYS! I'M FAMISHED!

TELL ME ABOUT IT, KURT!

HEY! THERE'S OUR EVENING MEAL RIGHT THERE.

IT'S ALREADY WOUNDED, A PIECE OF CAKE!

BE CAREFUL, THERE COULD BE A...

LION!!!

LION!! LION!!! LION!!!

CINDY WINS THE JACKPOT!

TEN MINUTES LATER...

HUMPF! THEY'RE TAKING THEIR TIME!

SHHH! SHUT IT WILL YOU!

AH! AT LAST! THEY'VE LEFT THE TABLE, LET'S GO!

NOT YET, IT'S STILL DANGEROUS.

OH NO... HERE COME THE JACKALS.

...AND THE HYENAS...

AND THE VULTURES!

MOVE IT! IT'S OUR TURN!

ZZZZ... ???

BUT THERE'S NOTHING LEFT!

YOU'RE FORGETTING CINDY'S TOOLS!

THIS?

OF COURSE! SHE SAID IT'S FOR BREAKING OPEN BONES TO GET THE MARROW!

I'D STILL PREFER A DECENT STEAK!

COME ON, THIS IS GREAT, I WAS SO HUNGRY!

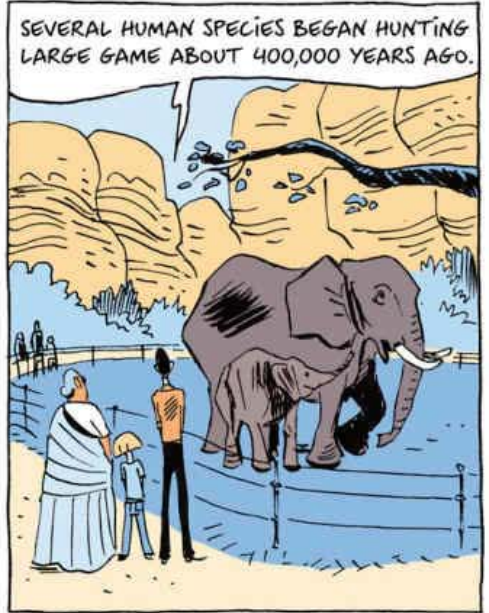
THE NEXT DAY...

LOOK! HERE COME THE KINGS OF THE FOOD CHAIN, HOME FROM WORK...

GOOD WE DIDN'T WAIT FOR THEM, AND WENT FORAGING WITH THE KIDS.



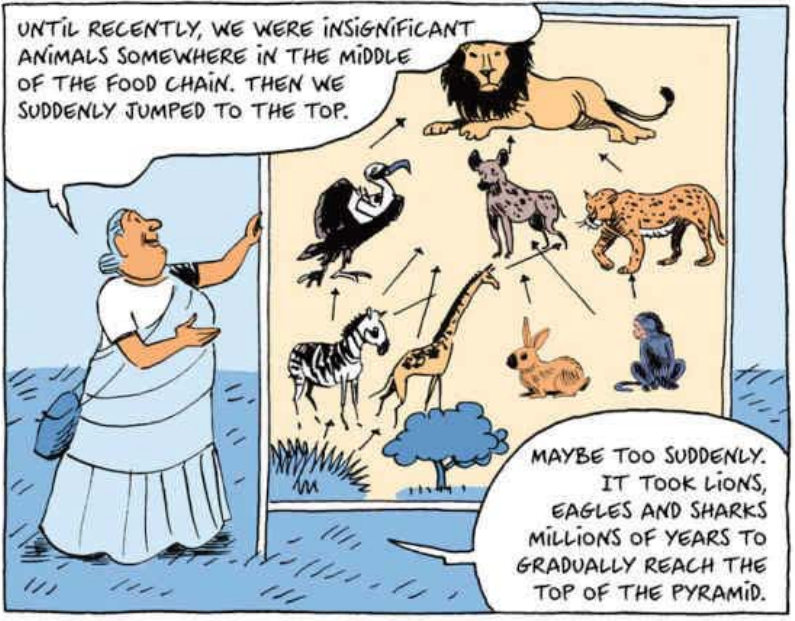
THAT'S RIGHT! EVEN WITH THEIR TOOLS, THEIR AMAZING ABILITY TO LEARN AND THEIR COMPLEX SOCIAL STRUCTURES, HUMANS WERE JUST WEAK, MARGINAL CREATURES FOR A GOOD TWO MILLION YEARS!



SEVERAL HUMAN SPECIES BEGAN HUNTING LARGE GAME ABOUT 400,000 YEARS AGO.

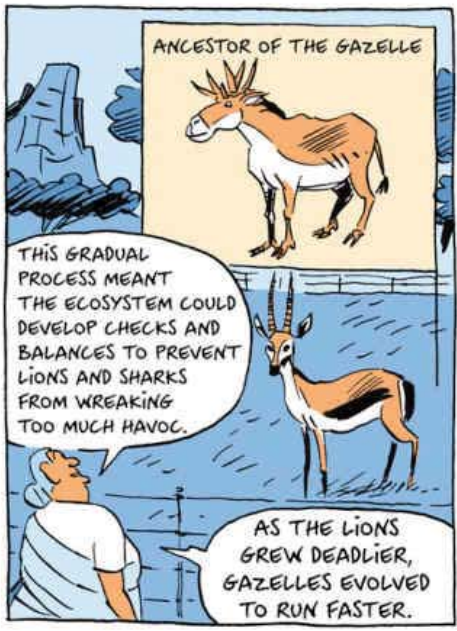


BUT HOMO SAPIENS DIDN'T REACH THE TOP OF THE FOOD CHAIN TILL THE LAST 100,000 YEARS.



UNTIL RECENTLY, WE WERE INSIGNIFICANT ANIMALS SOMEWHERE IN THE MIDDLE OF THE FOOD CHAIN. THEN WE SUDDENLY JUMPED TO THE TOP.

MAYBE TOO SUDDENLY. IT TOOK LIONS, EAGLES AND SHARKS MILLIONS OF YEARS TO GRADUALLY REACH THE TOP OF THE PYRAMID.



ANCESTOR OF THE GAZELLE

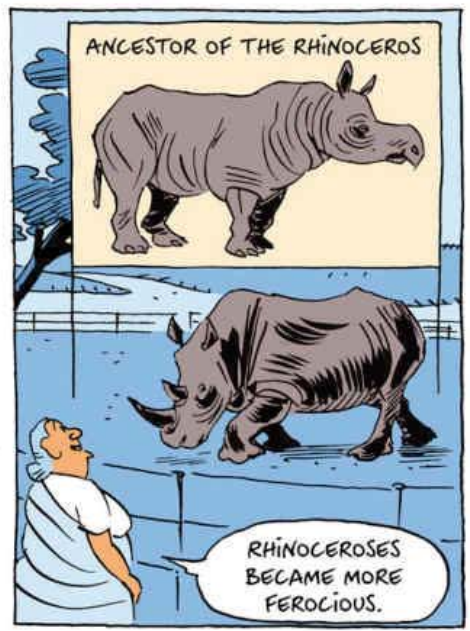
THIS GRADUAL PROCESS MEANT THE ECOSYSTEM COULD DEVELOP CHECKS AND BALANCES TO PREVENT LIONS AND SHARKS FROM WREAKING TOO MUCH HAVOC.

AS THE LIONS GREW DEADLIER, GAZELLES EVOLVED TO RUN FASTER.



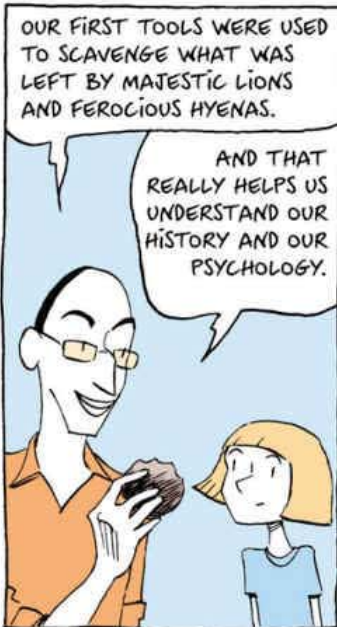
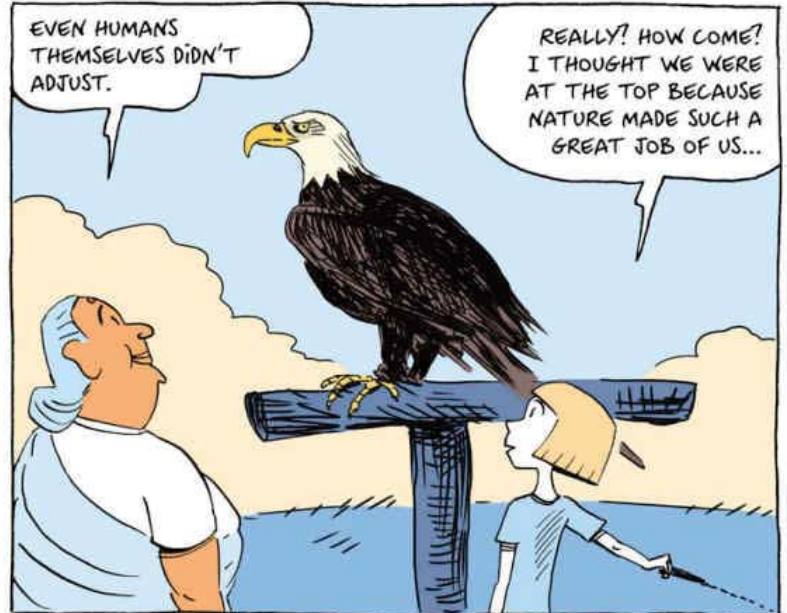
ANCESTOR OF THE HYENA

HYENAS LEARNED TO COOPERATE WITH ONE ANOTHER.

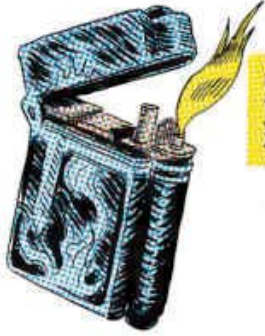


ANCESTOR OF THE RHINOCEROS

RHINOCEROSES BECAME MORE FEROCIOUS.



WHETHER YOU'RE AN ERECTUS, A NEANDERTHAL
OR JUST A SAPIENS, THIS IS FOR YOU!



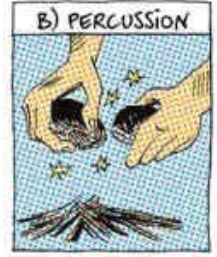
LIGHT THE FLAME!

A MODERN TECHNIQUE FOR THE WHOLE FAMILY, A BREEZE FOR MEN AND
WOMEN ALIKE, AND FOR KIDS OVER TEN! NO MORE CHANCE FIRES. CHOOSE

THE DAILY FLAME!™



800,000 YEARS AGO, SOME HUMAN SPECIES ONLY HAD FIRES WHEN THE
OPPORTUNITY AROSE, BUT THIS IS—300,000, TIME TO GET MODERN!



AMAZING BENEFITS TO THRILL THE WHOLE FAMILY!

<p>1) NIGHTTIME LIGHTING</p>	<p>2) A WARM COZY HOME!</p>	<p>3) AN EFFECTIVE DETERRENT TO UNWELCOME GUESTS!</p>
<p>4) MOOD LIGHTING FOR SPECIAL OCCASIONS</p>	<p>5) AND LAST BUT NOT LEAST... AN ASSET FOR YOUR PANTRY! FIRE CAN TRAP GAME (BOTH LARGE AND SMALL), AND TURNS THOSE IMPASSABLE THICKETS INTO A FANTASTIC GIANT BARBECUE!</p>	

*SPECIAL STONE AGE BONUS! ONCE THE BUSHFIRE'S EXTINGUISHED, DISCOVER THE DELIGHTS OF HOT FOOD. ROASTED NUTS, POTATOES AND MEAT... MMM... TRULY DELICIOUS!

YES, I WANT TO OPT IN FOR **THE DAILY FLAME™** AND WOULD LIKE TO RECEIVE A BROCHURE.

BROCHURE 1

"LEARNING TO MAKE
FIRE WITH FRICTION"

PLUS MY
INTRODUCTORY GIFT



BROCHURE 2

"LEARNING TO MAKE
FIRE WITH PERCUSSION"

PLUS MY
INTRODUCTORY GIFT.



NAME.....

ADDRESS.....

.....





TIRED OF SPENDING HOURS EVERY DAY CHEWING ON RAW VEGETABLES AND MEAT? FRUSTRATED WHEN YOU CAN'T THINK PROPERLY BECAUSE ALL THE BLOOD FLOWS TO YOUR STOMACH? FED UP WITH INTESTINAL PARASITES? GIVE COOKING A CHANCE!

THE NEW EASY METHOD FROM HOMO GASTRONOMICUS

SINCE I GOT THE HANG OF COOKING WITH FIRE, I'VE BEEN A NEW MAN!



WITH THE FIRE DIET, THE NEW EASY HOMO GASTRONOMICUS™ METHOD, COOKING WILL TRANSFORM THE CHEMISTRY OF YOUR FOOD AND THE BIOLOGY OF YOUR BODY!

ACCORDING TO OUR SPECIALIST, MRS. ANN GIBBONS, COOKING YOUR FOOD MAKES YOUR TEETH AND YOUR INTESTINES SMALLER, AND YOUR BRAIN BIGGER.

LONG INTESTINES AND BIG BRAINS CONSUME SO MUCH ENERGY, IT'S DIFFICULT TO HAVE BOTH! BY SHORTENING THE DIGESTIVE TRACT AND REDUCING ITS ENERGY CONSUMPTION, COOKED FOOD WILL GIVE YOU A JUMBO BRAIN!



SIX UNIQUE ADVANTAGES TO DELIGHT THE WHOLE FAMILY!

- 1 DIGEST SO MANY MORE FOODS! (WHEAT, RICE, POTATOES...)
- 2 HAVE A SUPER-STRONG CONSTITUTION! (COOKING KILLS GERMS AND PARASITES!)
- 3 ENJOY EASY DIGESTION! (YOU'LL CHEW YOUR FOOD IN JUST ONE HOUR—COMPARED WITH THE FIVE HOURS IT TAKES A CHIMPANZEE!)
- 4 REDISCOVER TASTE! (FRUIT, NUTS, INSECTS AND DEAD ANIMALS WILL HAVE DELICIOUS NEW FLAVORS! YUMMY!)
- 5 EAT A VARIED DIET!
- 6 SAVE TIME!

*OFFER AVAILABLE ONLY TO NEANDERTHALS AND SAPIENS.

THE AD DOESN'T MENTION ANOTHER ADVANTAGE—FIRE OPENED THE FIRST SIGNIFICANT GULF BETWEEN HUMANS AND OTHER ANIMALS.



ALMOST ALL ANIMALS DEPEND ON THEIR OWN BODIES FOR THEIR POWER. ON THE STRENGTH OF THEIR MUSCLES, THE SIZE OF THEIR TEETH, THE BREADTH OF THEIR WINGS.



SOME ANIMALS CAN HARNESS WINDS AND CURRENTS BUT THEY CAN'T CONTROL THESE NATURAL FORCES, AND THEY'RE ALWAYS CONSTRAINED BY THEIR OWN PHYSIQUE.

TAKE EAGLES: THEY IDENTIFY THERMAL COLUMNS RISING FROM THE GROUND, SPREAD THEIR GIANT WINGS AND LET THE HOT AIR LIFT THEM UPWARD.



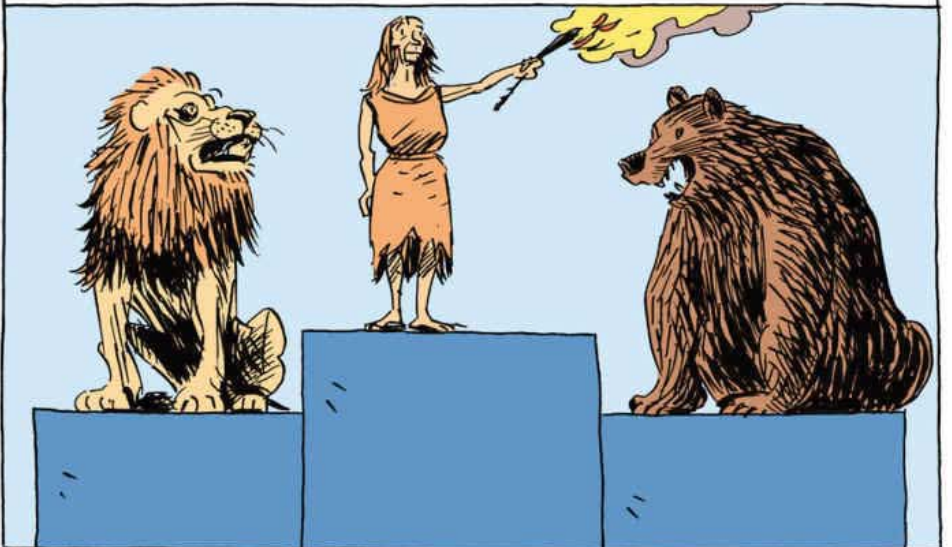
BUT EAGLES CAN'T CONTROL WHERE THESE THERMALS ARE, AND THEIR WINGSPAN DICTATES HOW HIGH OR FAR THEY'LL BE CARRIED.

WHEN HUMANS DOMESTICATED FIRE, THEY GAINED CONTROL OF A MANAGEABLE AND POTENTIALLY LIMITLESS FORCE. UNLIKE EAGLES, HUMANS COULD CHOOSE WHEN AND WHERE TO USE THIS FORCE, AND COULD EXPLOIT FIRE FOR ANY NUMBER OF TASKS.



MORE IMPORTANTLY, THE POWER OF FIRE WASN'T LIMITED BY THE HUMAN BODY'S CONSTRAINTS. A SINGLE HUMAN BEING WITH A FLINT COULD BURN DOWN AN ENTIRE FOREST IN A MATTER OF HOURS.

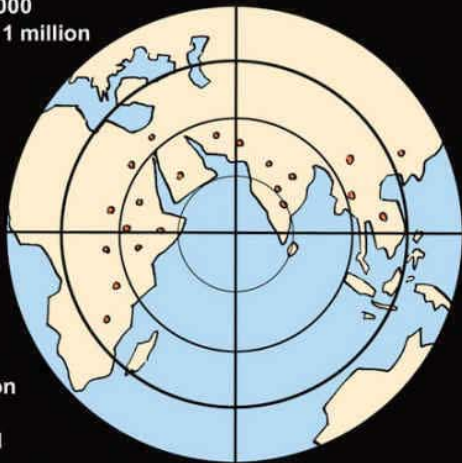
THE DOMESTICATION OF FIRE WAS A SIGN OF THINGS TO COME. IT WAS THE FIRST IMPORTANT STEP ON THE WAY TO THE ATOM BOMB...



Searching: Humans, all known species

Date: -150 000

Population: 1 million



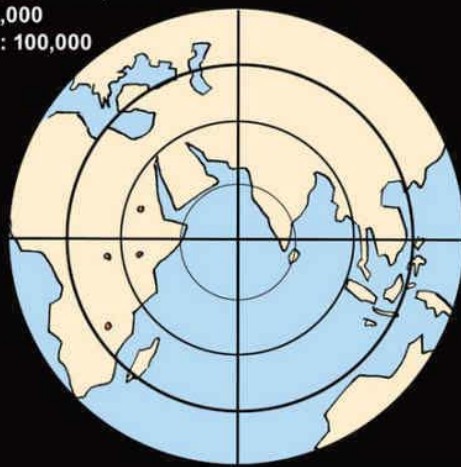
Conservation Status: Endangered

DESPITE THE BENEFITS OF FIRE, HUMANS WERE STILL VERY MARGINAL CREATURES.

Searching: Homo Sapiens

Date: -150,000

Population: 100,000



OUR OWN SPECIES, HOMO SAPIENS, HAD ALREADY MADE ITS APPEARANCE, BUT WAS STILL INSIGNIFICANT, MINDING ITS OWN BUSINESS IN A CORNER OF AFRICA.

WE DON'T KNOW EXACTLY WHEN ANIMALS THAT CAN BE CLASSIFIED AS HOMO SAPIENS FIRST EVOLVED FROM AN EARLIER TYPE OF HUMANS.

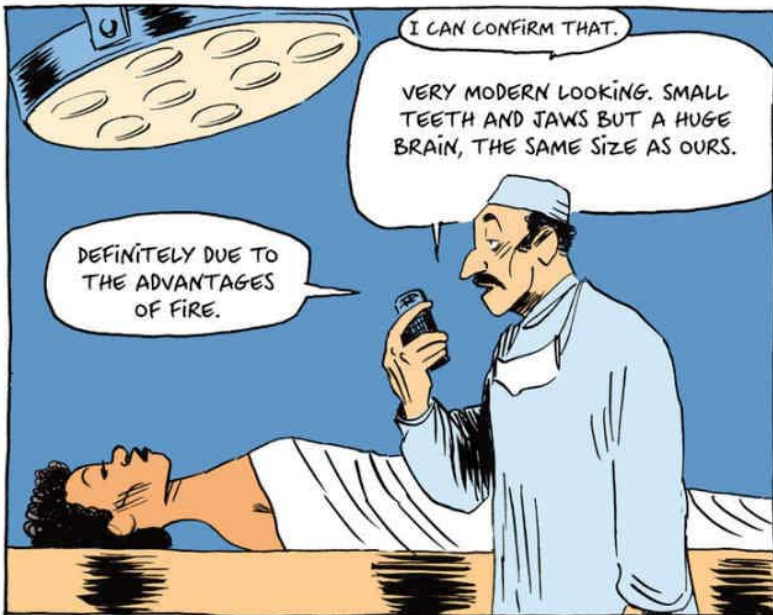
BUT MOST SCIENTISTS AGREE THAT BY 150,000 YEARS AGO, SAPIENS IN EAST AFRICA LOOKED A LOT LIKE US.



I CAN CONFIRM THAT.

VERY MODERN LOOKING. SMALL TEETH AND JAWS BUT A HUGE BRAIN, THE SAME SIZE AS OURS.

DEFINITELY DUE TO THE ADVANTAGES OF FIRE.

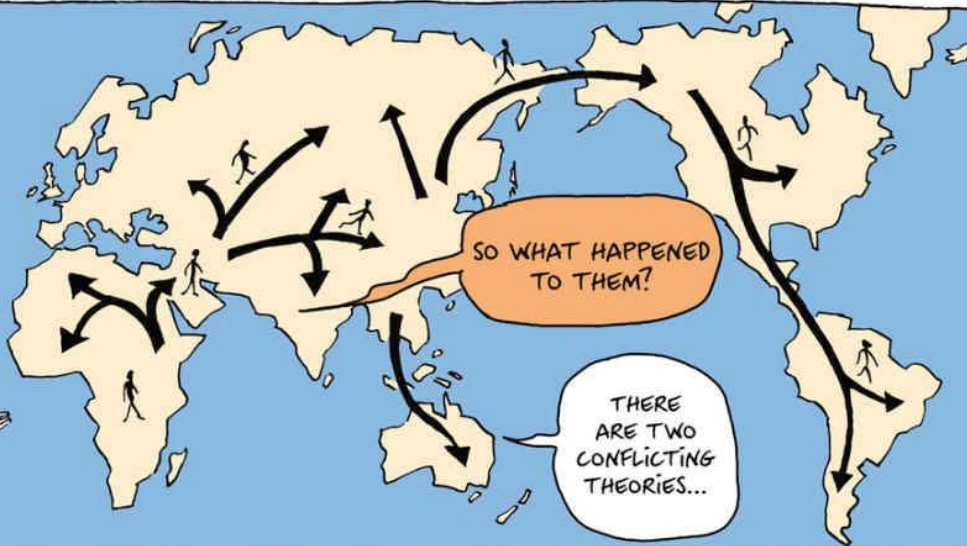


THEN CAME THE EXPLOSION. ROUGHLY 70,000 YEARS AGO SAPIENS SUDDENLY SPREAD ALL OVER THE WORLD.

BUT WHEN HOMO SAPIENS LEFT AFRICA, MOST OF EURASIA WAS ALREADY HOME TO OTHER HUMAN SPECIES.

SO WHAT HAPPENED TO THEM?

THERE ARE TWO CONFLICTING THEORIES...



THE INTERBREEDING THEORY

A WONDERFUL STORY OF
ATTRACTION, SEX AND MINGLING.

HOMO SAPIENS ARE AFRICAN IMMIGRANTS WHO SPREAD ALL OVER THE WORLD FRATERNIZING WITH OTHER HUMAN POPULATIONS. PRESENT DAY HUMANS ARE THE RESULT OF THIS MELTING POT.

WHEN SAPIENS REACHED EUROPE AND THE MIDDLE EAST, THEY MET THE NEANDERTHALS.

BETTER RESISTANCE TO THE COLD

BIGGER BRAINS

MORE MUSCULAR

NEANDERTHALS ARE OFTEN CARICATURED AS ARCHETYPICAL BRUTISH, STUPID "CAVE PEOPLE," BUT RECENT EVIDENCE HAS CHANGED THEIR IMAGE.

YOU BUILT YOUR BRAND ON BRUTE FORCE FOR 200 YEARS. WAKE-UP CALL! THIS IS THE TWENTY-FIRST CENTURY! HOW ABOUT SOFTENING THE IMAGE A BIT?

YES, THAT WORKS FOR US. WE NEVER REALLY LIKED DRAGGING FEMALES AROUND BY THE HAIR. WE'RE BOTH GAY, ANYWAY.

ARCHAEOLOGISTS HAVE DISCOVERED THE BONES OF NEANDERTHALS WHO LIVED FOR MANY YEARS WITH PHYSICAL HANDICAPS. CLEARLY, NEANDERTHALS CARED FOR THEIR SICK AND DISABLED.

USES TOOLS AND FIRE

GOOD AT HUNTING

ACCORDING TO THE INTERBREEDING THEORY, WHEN SAPIENS SPREAD INTO NEANDERTHAL LANDS, THEY INTERBRED UNTIL THE TWO POPULATIONS MERGED. IF THIS IS THE CASE, TODAY'S EURASIANS ARE NOT PURE SAPIENS BUT A BLEND OF SAPIENS AND NEANDERTHALS.

HOMO SAPIENS

HOMO NEANDERTHALENSIS

SIMILARLY, WHEN SAPIENS REACHED EAST ASIA, THEY INTERBRED WITH THE LOCAL ERECTUS, SO SOME MODERN PEOPLE ARE A MIXTURE OF SAPIENS AND ERECTUS.

HOMO SAPIENS

HOMO ERECTUS

DID YOU SEE DIANA'S NEW BOYFRIEND? A REGULAR NEANDERTHAL, LIKE TOTALLY!

THE REPLACEMENT THEORY

A TERRIBLE STORY OF INCOMPATIBILITY, REVULSION AND GENOCIDE.

THIS THEORY STRESSES THAT SAPIENS WAS ANATOMICALLY DIFFERENT FROM OTHER HUMANS. AND MOST LIKELY HAD DIFFERENT MATING HABITS. EVEN DIFFERENT BODY ODORS...



THEY WOULD HAVE HAD LITTLE SEXUAL INTEREST IN EACH OTHER.



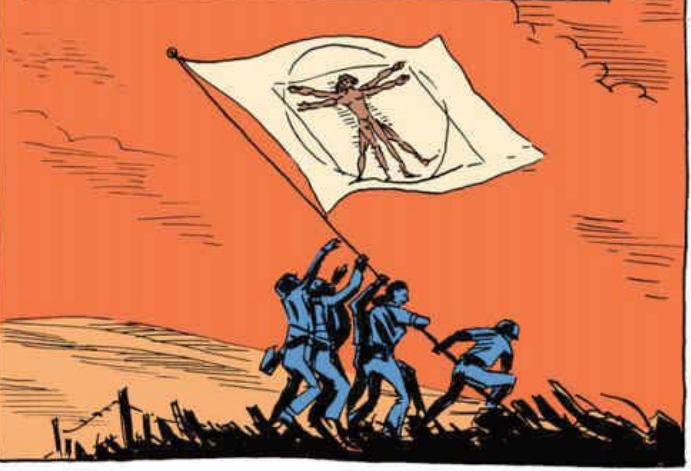
EVEN IF A NEANDERTHAL ROMEO AND A SAPIENS JULIET FELL IN LOVE, THEY COULDN'T PRODUCE FERTILE CHILDREN, BECAUSE THE GENETIC GULF SEPARATING THEIR TWO POPULATIONS WAS ALREADY UNBRIDGEABLE.



THE TWO POPULATIONS REMAINED COMPLETELY DISTINCT, AND WHEN THE NEANDERTHALS DIED OUT, OR WERE KILLED OFF, THEIR GENES DIED WITH THEM.

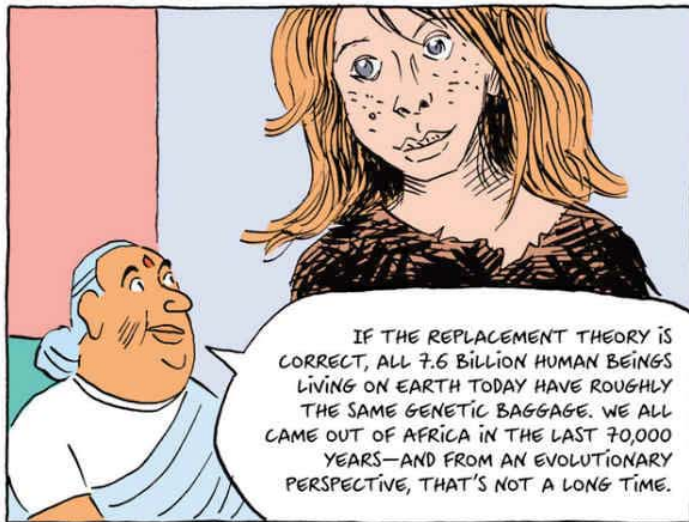


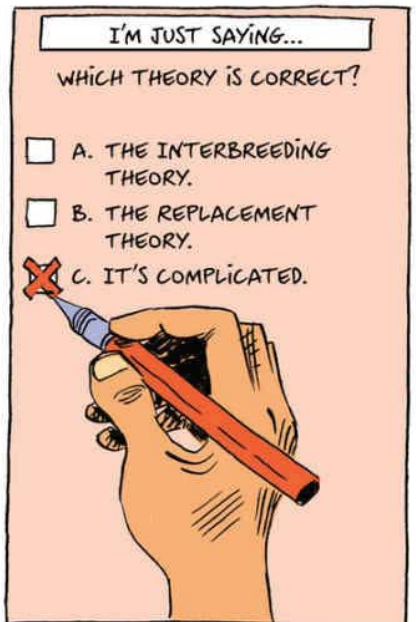
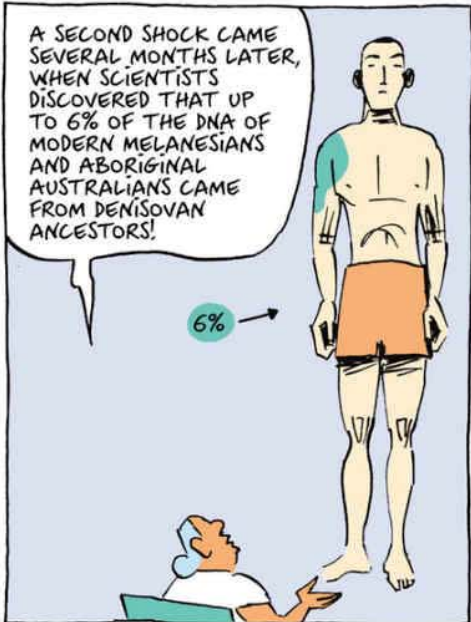
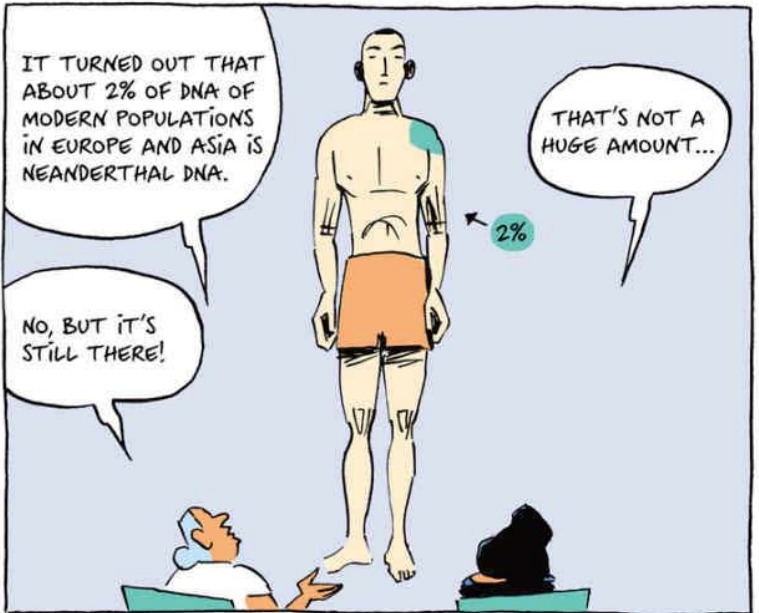
ACCORDING TO THIS THEORY, SAPIENS REPLACED ALL PREVIOUS HUMAN POPULATIONS WITH NO INTERBREEDING.



IF THAT'S THE CASE, ALL CONTEMPORARY HUMANS CAN BE TRACED BACK, EXCLUSIVELY, TO EAST AFRICA, 70,000 YEARS AGO. WE'RE ALL "PURE SAPIENS."

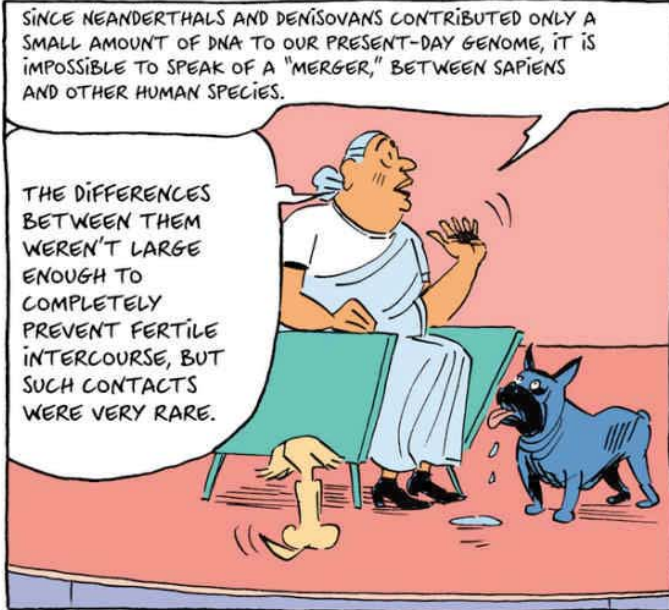






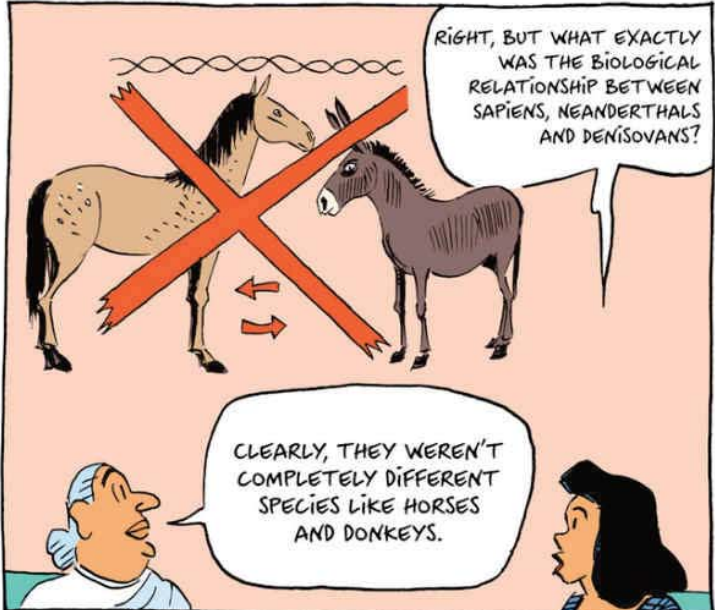
SINCE NEANDERTHALS AND DENISOVANS CONTRIBUTED ONLY A SMALL AMOUNT OF DNA TO OUR PRESENT-DAY GENOME, IT IS IMPOSSIBLE TO SPEAK OF A "MERGER," BETWEEN SAPIENS AND OTHER HUMAN SPECIES.

THE DIFFERENCES BETWEEN THEM WEREN'T LARGE ENOUGH TO COMPLETELY PREVENT FERTILE INTERCOURSE, BUT SUCH CONTACTS WERE VERY RARE.



RIGHT, BUT WHAT EXACTLY WAS THE BIOLOGICAL RELATIONSHIP BETWEEN SAPIENS, NEANDERTHALS AND DENISOVANS?

CLEARLY, THEY WEREN'T COMPLETELY DIFFERENT SPECIES LIKE HORSES AND DONKEYS.



SO THEY WERE DIFFERENT POPULATIONS OF THE SAME SPECIES, LIKE YOUR BULLDOG, BRUTUS, AND YOUR LITTLE POMERANIAN, KIKI?

NO... MORE THAN THAT.



BIOLOGY ISN'T BLACK AND WHITE. THERE ARE IMPORTANT GRAY AREAS.

TWO SPECIES THAT EVOLVED FROM A COMMON ANCESTOR, SUCH AS HORSES AND DONKEYS, WERE AT ONE TIME JUST TWO POPULATIONS OF THE SAME SPECIES, LIKE POMERANIANS AND BULLDOGS.



THERE MUST HAVE BEEN A POINT WHEN THE TWO POPULATIONS WERE ALREADY QUITE DISTINCT, BUT STILL CAPABLE ON RARE OCCASIONS OF HAVING SEX AND PRODUCING FERTILE OFFSPRING.

THEN ANOTHER MUTATION SEVERED THIS LAST CONNECTING THREAD, AND THEY WENT THEIR SEPARATE EVOLUTIONARY WAYS.



IT SEEMS THAT ABOUT 50,000 YEARS AGO, SAPIENS, NEANDERTHALS AND DENISOVANS WERE AT THIS BORDERLINE POINT. THEY WERE ALMOST, BUT NOT QUITE, SEPARATE SPECIES.



IF WE HAVE A FEW MINUTES, I'D LIKE TO EXPLAIN HOW SAPIENS WERE ALREADY VERY DIFFERENT FROM NEANDERTHALS AND DENISOVANS, NOT JUST GENETICALLY AND PHYSICALLY, BUT MORE SIGNIFICANTLY IN THEIR COGNITIVE AND SOCIAL ABILITIES...



THIS IS ALL FASCINATING, PROFESSOR, BUT OUR AIRTIME IS UP.

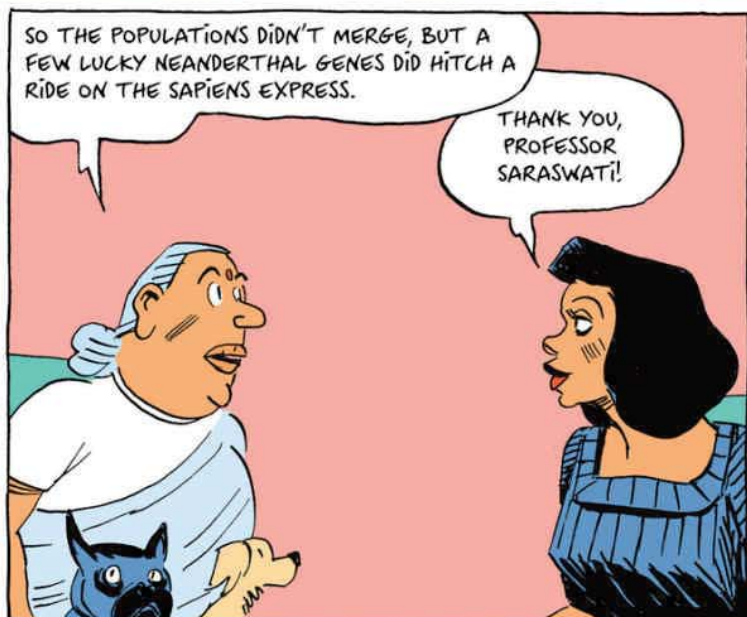
WHAT A PITY...

WELL, I'LL WRAP THIS UP BY REITERATING THAT IT WAS STILL POSSIBLE, ON RARE OCCASIONS, FOR A SAPIENS AND A NEANDERTHAL TO PRODUCE FERTILE OFFSPRING.



SO THE POPULATIONS DIDN'T MERGE, BUT A FEW LUCKY NEANDERTHAL GENES DID HITCH A RIDE ON THE SAPIENS EXPRESS.

THANK YOU, PROFESSOR SARASWATI!



IT'S DISTURBING—AND PERHAPS THRILLING—TO THINK THAT WE SAPIENS COULD AT ONE TIME HAVE SEX WITH AN ANIMAL FROM A DIFFERENT SPECIES, AND PRODUCE CHILDREN TOGETHER.



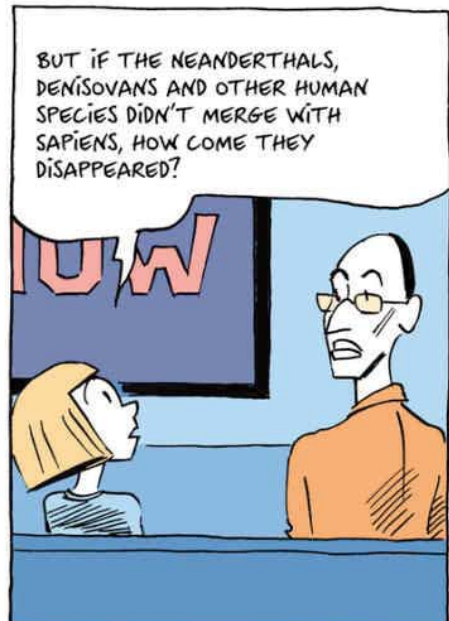
If you'd like to marry a Neanderthal dial 1-800-Neanderthal

SHE'S ONE HELL OF A TEACHER!




and tell us what you think!

BUT IF THE NEANDERTHALS, DENISOVANS AND OTHER HUMAN SPECIES DIDN'T MERGE WITH SAPIENS, HOW COME THEY DISAPPEARED?

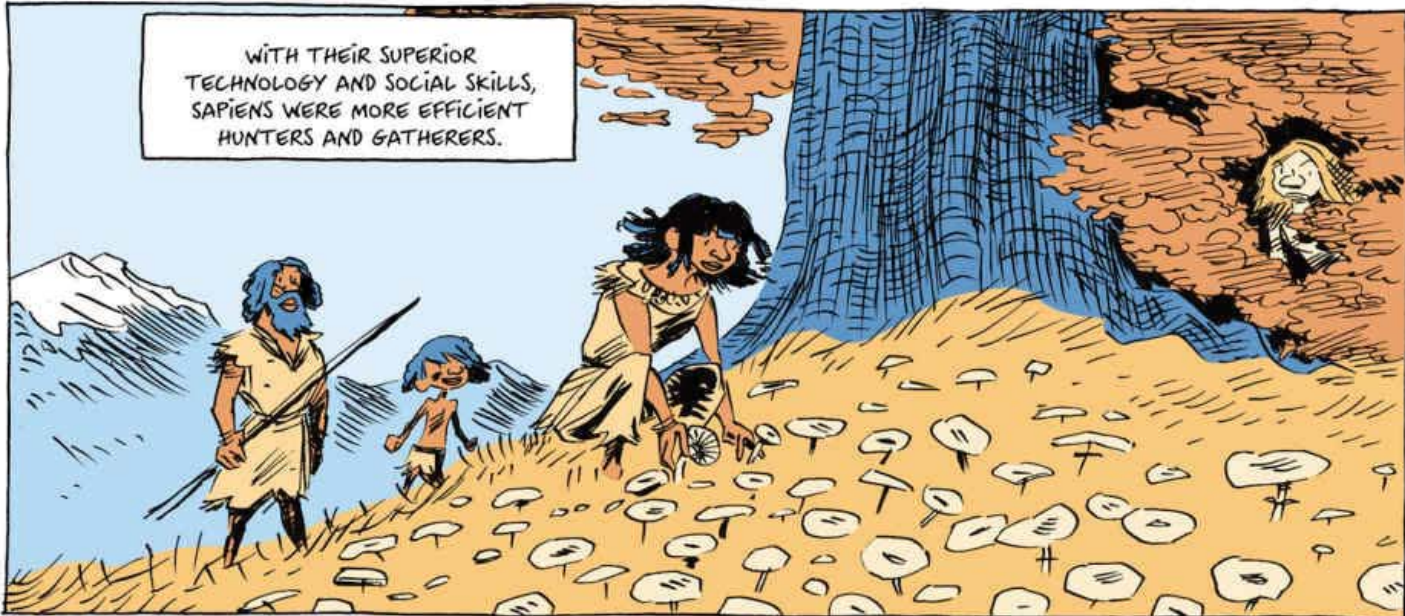


A VALLEY IN THE BALKANS, WHERE NEANDERTHALS LIVED FOR HUNDREDS OF THOUSANDS OF YEARS.



 ONE POSSIBLE EXPLANATION IS THAT HOMO SAPIENS DROVE THEM TO EXTINCTION.

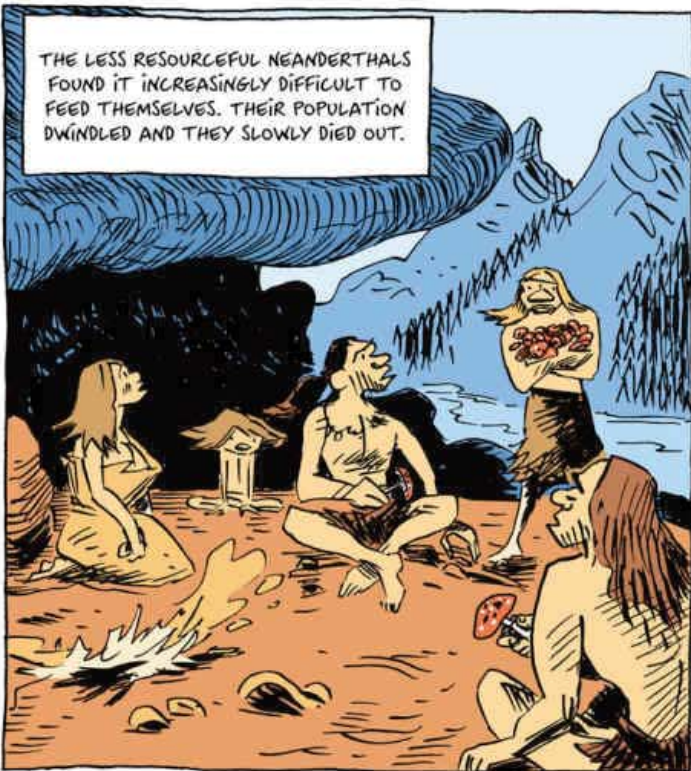
WITH THEIR SUPERIOR TECHNOLOGY AND SOCIAL SKILLS, SAPIENS WERE MORE EFFICIENT HUNTERS AND GATHERERS.



SO, THEY MULTIPLIED AND SPREAD.



THE LESS RESOURCEFUL NEANDERTHALS FOUND IT INCREASINGLY DIFFICULT TO FEED THEMSELVES. THEIR POPULATION DWINDLED AND THEY SLOWLY DIED OUT.



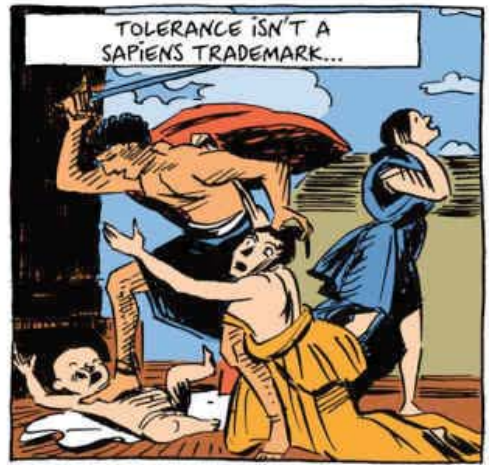
EXCEPT PERHAPS FOR ONE OR TWO WHO JOINED THEIR SAPIENS NEIGHBORS.

LOOK, GUYS! I FOUND THESE TWO KIDS!

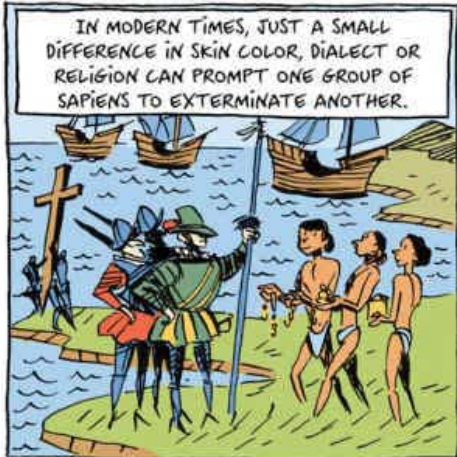




ANOTHER POSSIBILITY IS THAT COMPETITION FOR RESOURCES FLARED UP INTO VIOLENCE AND GENOCIDE.



TOLERANCE ISN'T A SAPIENS TRADEMARK...



IN MODERN TIMES, JUST A SMALL DIFFERENCE IN SKIN COLOR, DIALECT OR RELIGION CAN PROMPT ONE GROUP OF SAPIENS TO EXTERMINATE ANOTHER.



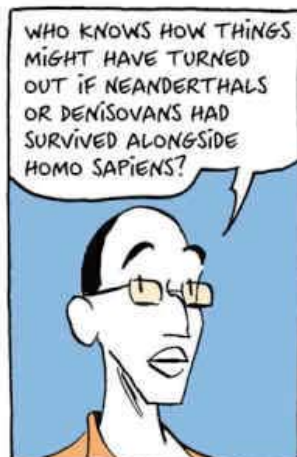
WHY SHOULD ANCIENT SAPIENS HAVE BEEN ANY MORE TOLERANT?



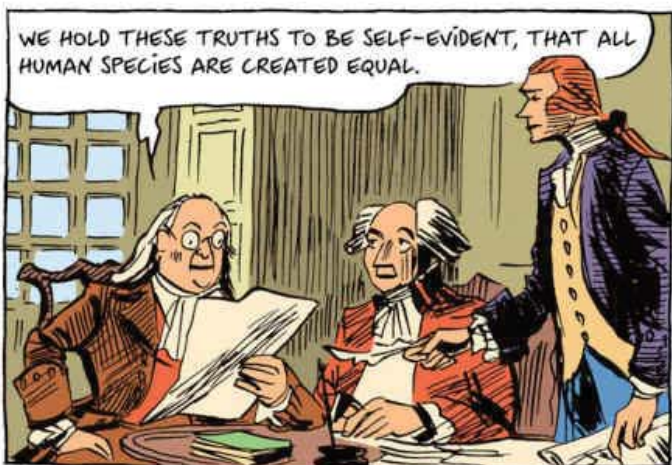
IT MAY WELL BE THAT WHEN SAPIENS ENCOUNTERED NEANDERTHALS, HISTORY SAW ITS FIRST AND MOST SIGNIFICANT ETHNIC-CLEANSING CAMPAIGN.



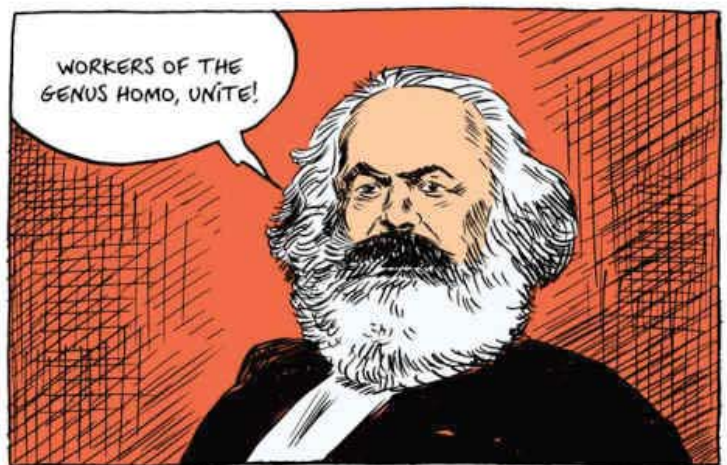
WHATEVER HAPPENED, THE NEANDERTHALS—ALONG WITH THE OTHER HUMAN SPECIES—POSE ONE OF HISTORY'S GREATEST "WHAT IF" QUESTIONS.



WHO KNOWS HOW THINGS MIGHT HAVE TURNED OUT IF NEANDERTHALS OR DENISOVANS HAD SURVIVED ALONGSIDE HOMO SAPIENS?



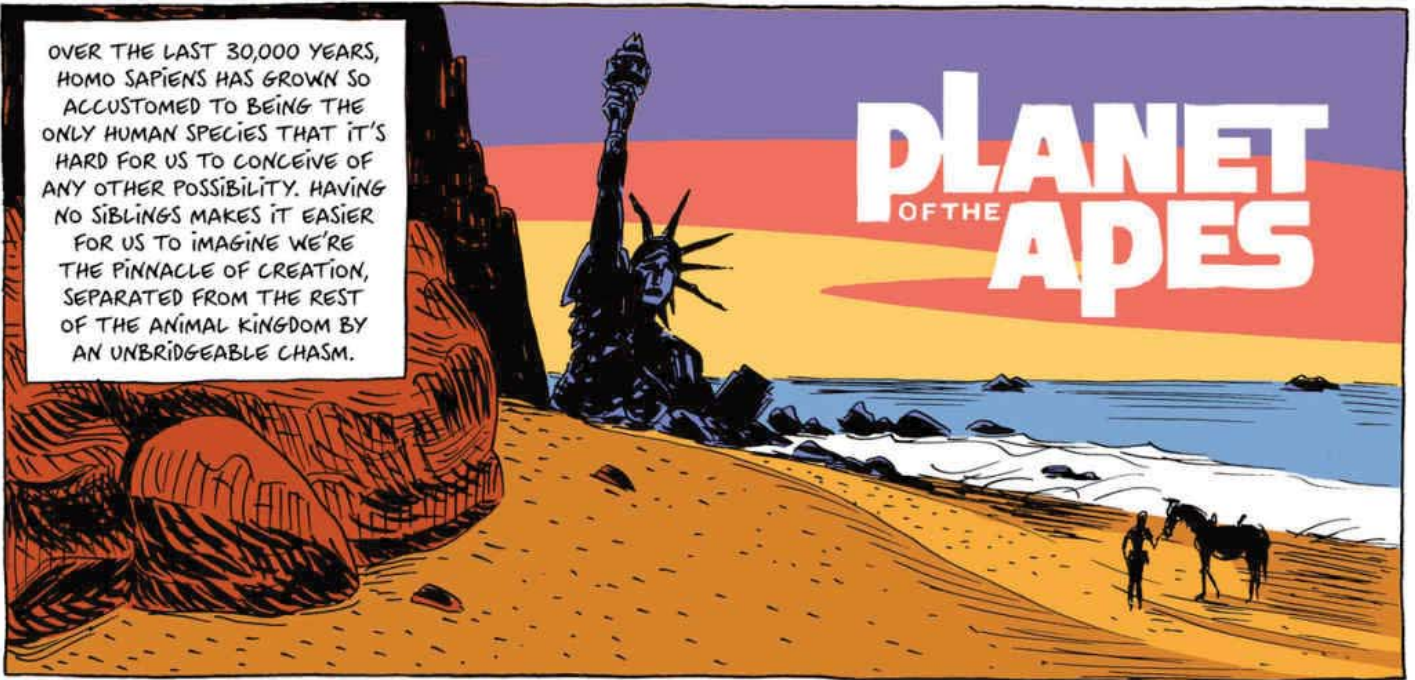
WE HOLD THESE TRUTHS TO BE SELF-EVIDENT, THAT ALL HUMAN SPECIES ARE CREATED EQUAL.



WORKERS OF THE GENUS HOMO, UNITE!

OVER THE LAST 30,000 YEARS, HOMO SAPIENS HAS GROWN SO ACCUSTOMED TO BEING THE ONLY HUMAN SPECIES THAT IT'S HARD FOR US TO CONCEIVE OF ANY OTHER POSSIBILITY. HAVING NO SIBLINGS MAKES IT EASIER FOR US TO IMAGINE WE'RE THE PINNACLE OF CREATION, SEPARATED FROM THE REST OF THE ANIMAL KINGDOM BY AN UNBRIDGEABLE CHASM.

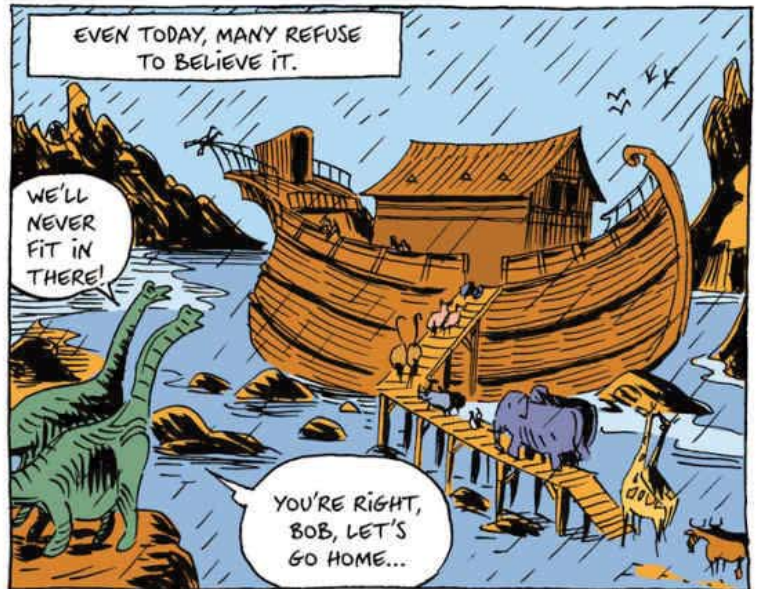
PLANET OF THE APES



WHEN CHARLES DARWIN EXPLAINED THAT HOMO SAPIENS WAS JUST ANOTHER KIND OF ANIMAL, PEOPLE WERE OUTRAGED.



EVEN TODAY, MANY REFUSE TO BELIEVE IT.



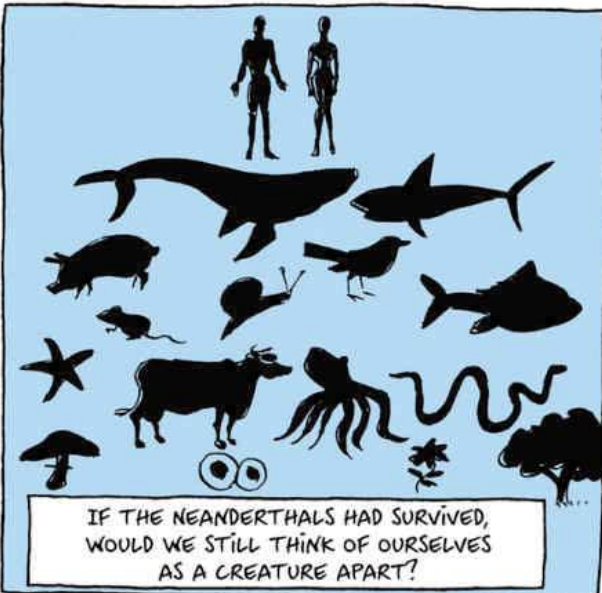
WE'LL NEVER FIT IN THERE!

YOU'RE RIGHT, BOB, LET'S GO HOME...

PERHAPS THIS IS EXACTLY WHY OUR ANCESTORS WIPED OUT THE NEANDERTHALS. THEY WERE TOO FAMILIAR TO IGNORE, BUT TOO DIFFERENT TO TOLERATE.

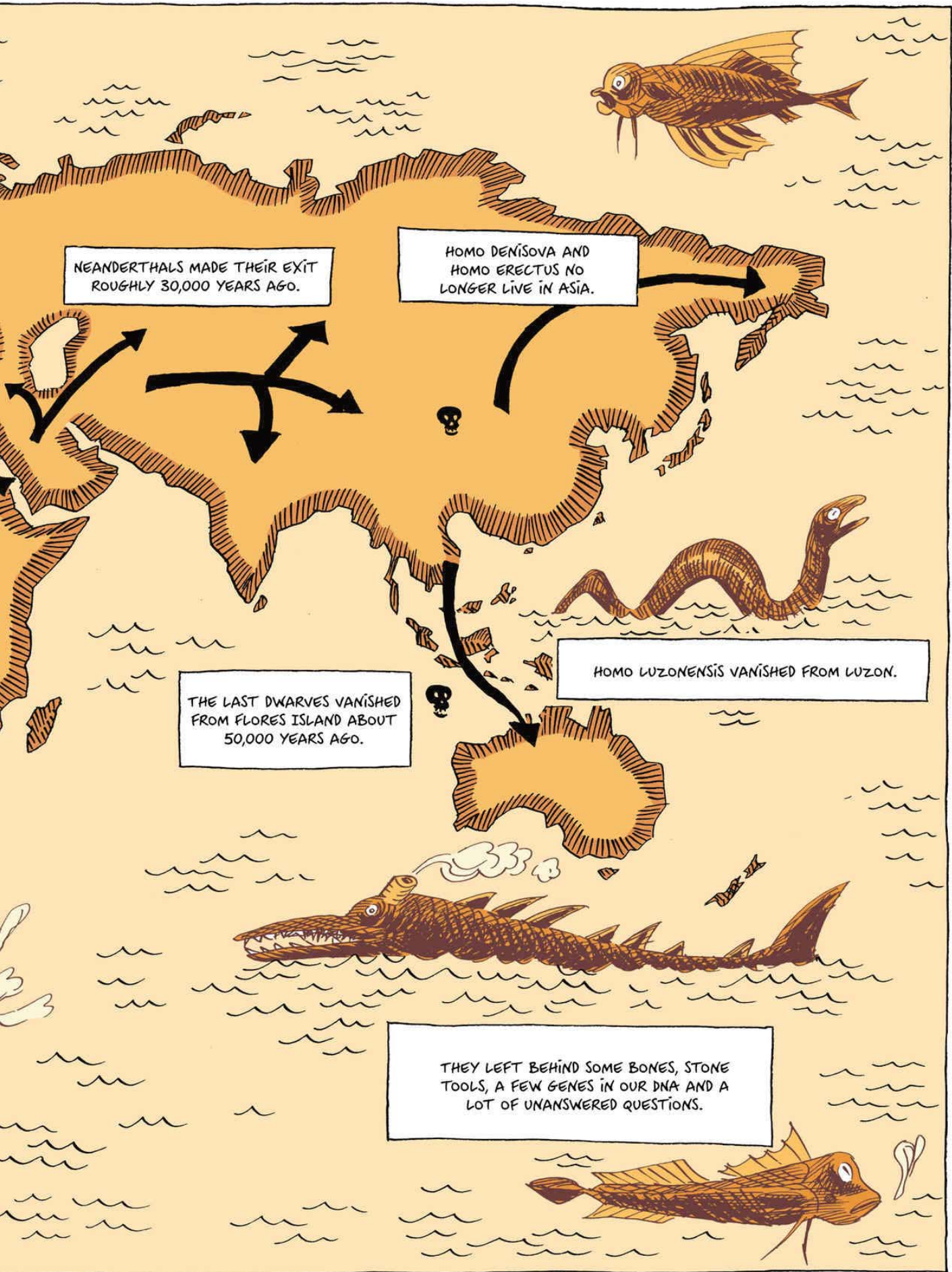


IF THE NEANDERTHALS HAD SURVIVED, WOULD WE STILL THINK OF OURSELVES AS A CREATURE APART?



WHETHER OR NOT SAPIENS ARE TO BLAME, AS SOON AS THEY ARRIVED SOMEWHERE NEW THE NATIVE HUMAN POPULATION BECAME EXTINCT.





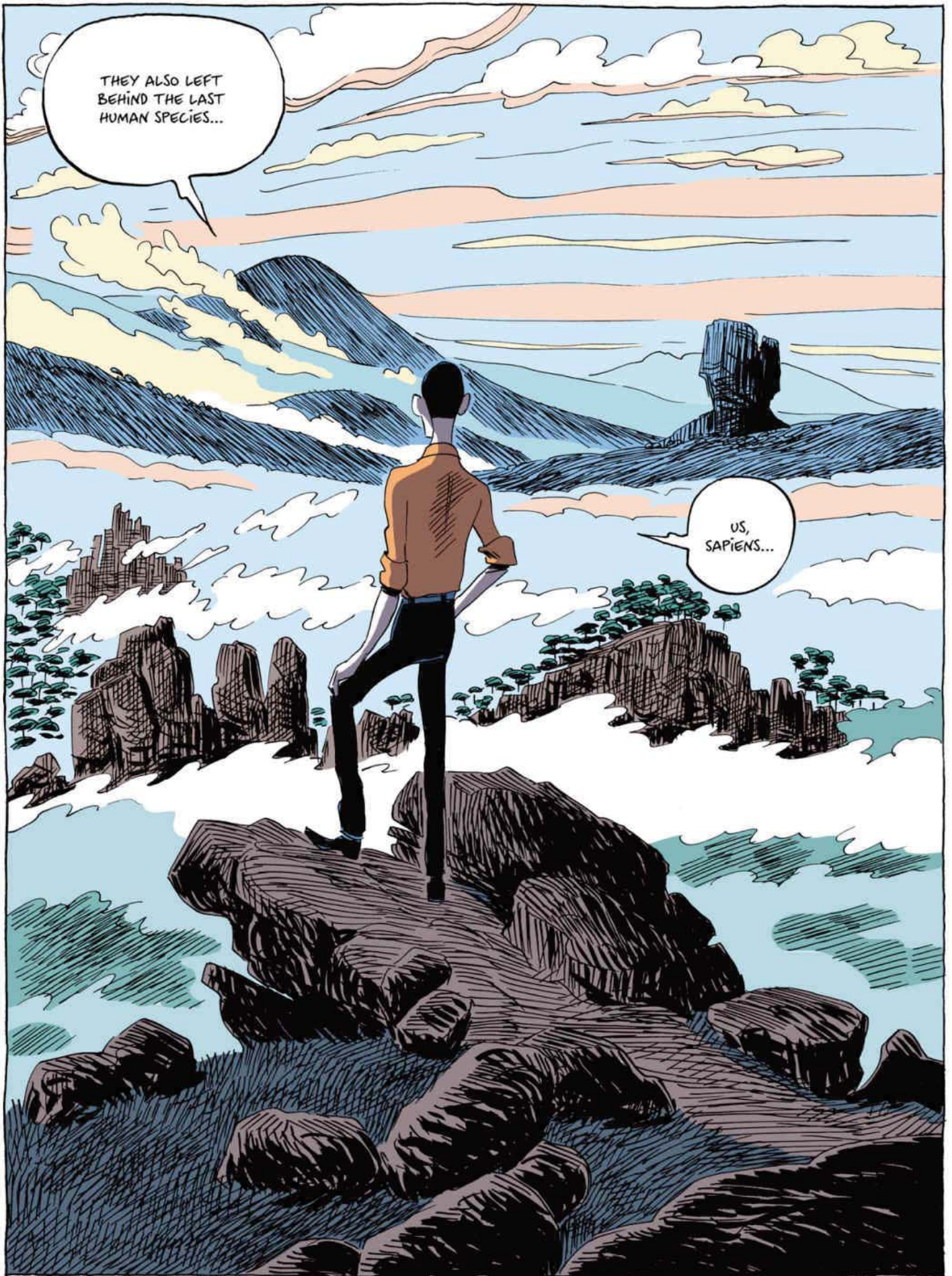
NEANDERTHALS MADE THEIR EXIT
ROUGHLY 30,000 YEARS AGO.

HOMO DENISOVA AND
HOMO ERECTUS NO
LONGER LIVE IN ASIA.

THE LAST DWARVES VANISHED
FROM FLORES ISLAND ABOUT
50,000 YEARS AGO.

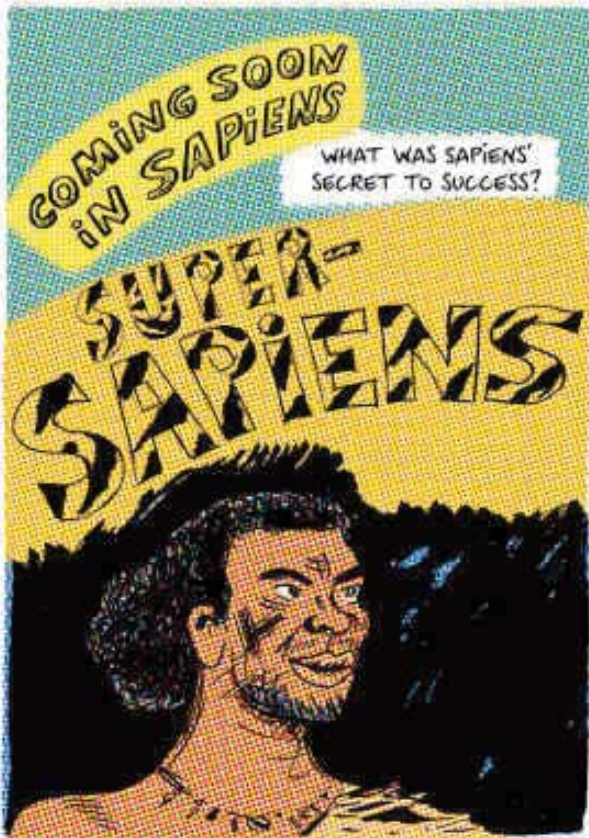
HOMO LUZONENSIS VANISHED FROM LUZON.

THEY LEFT BEHIND SOME BONES, STONE
TOOLS, A FEW GENES IN OUR DNA AND A
LOT OF UNANSWERED QUESTIONS.



THEY ALSO LEFT
BEHIND THE LAST
HUMAN SPECIES...

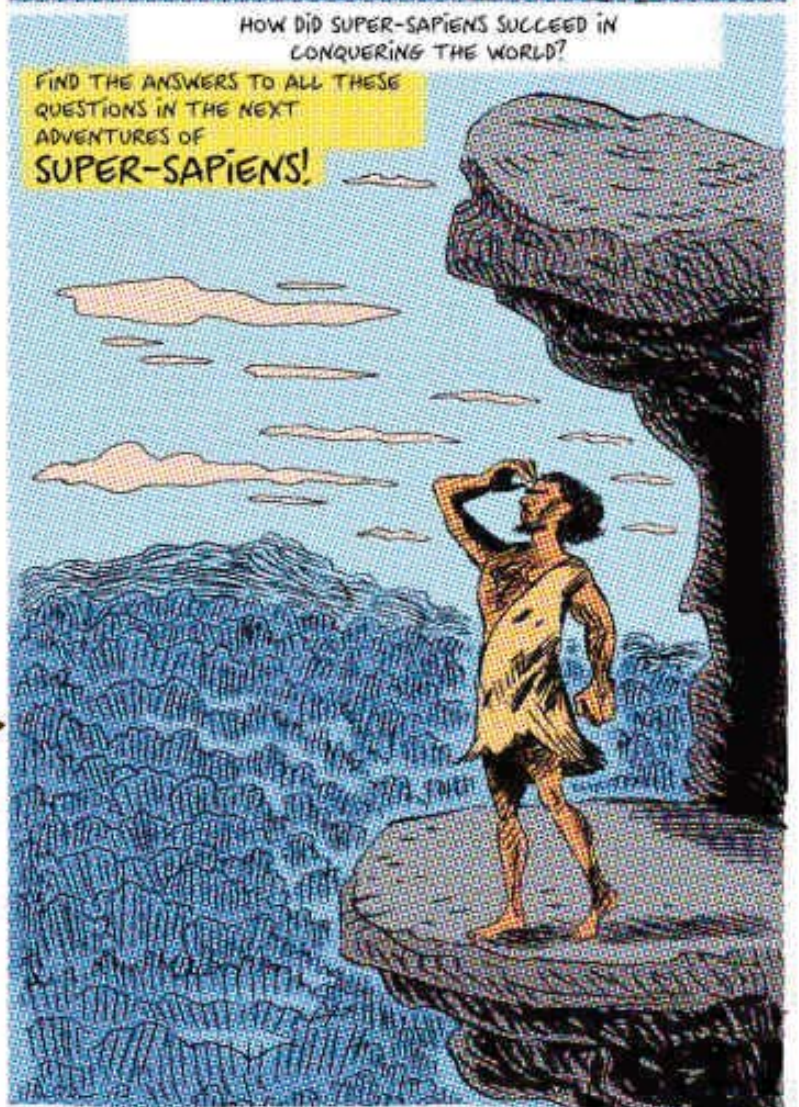
US,
SAPIENS...



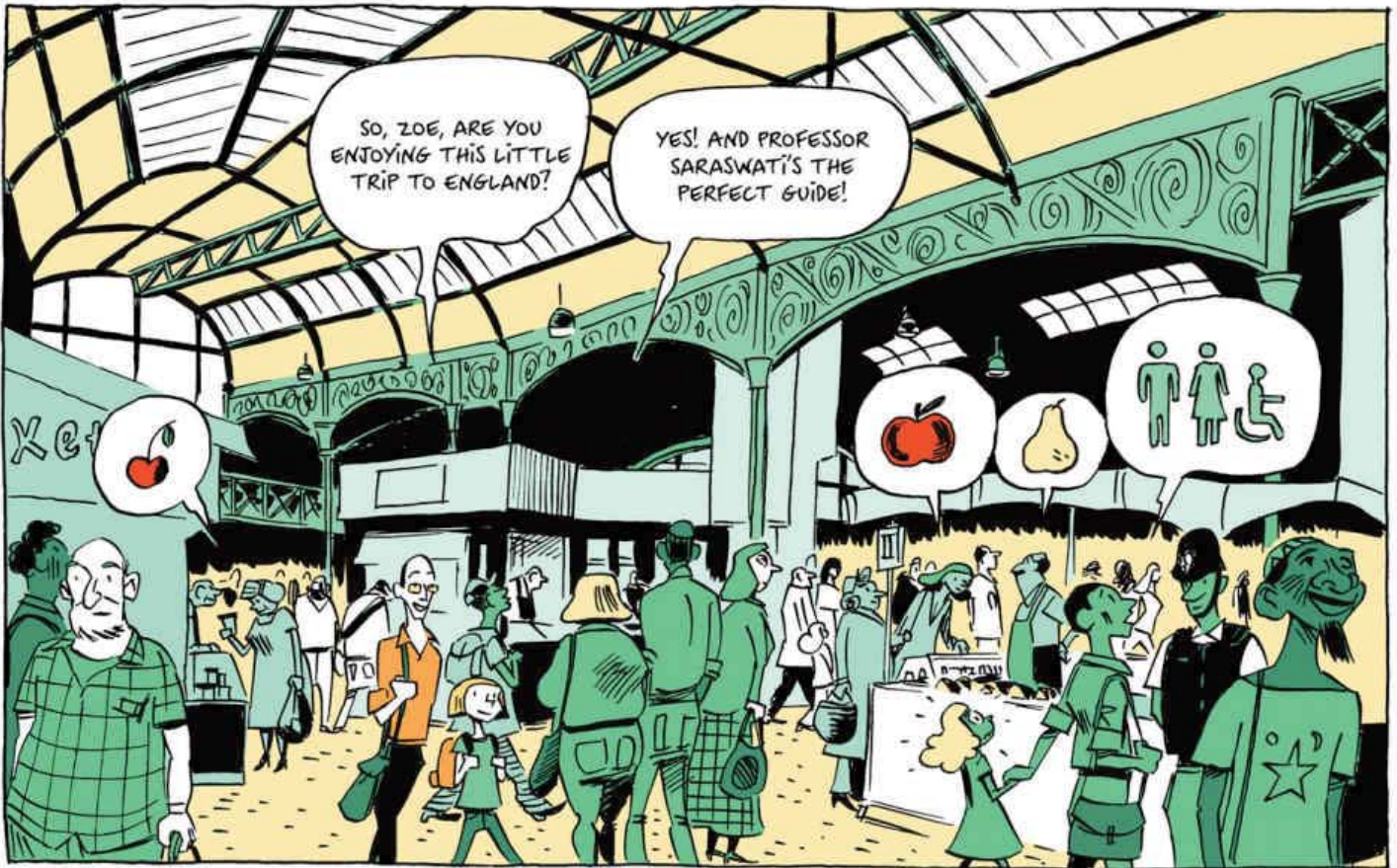
HOW DID SUPER-SAPIENS DRIVE ALL OTHER HUMAN SPECIES INTO OBLIVION?

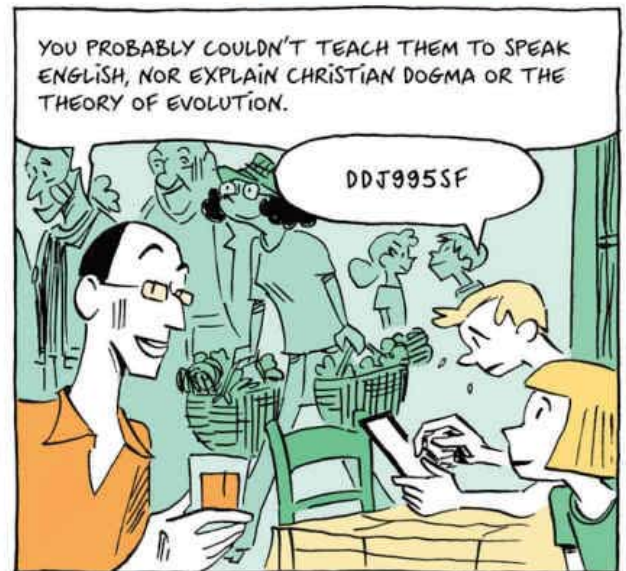
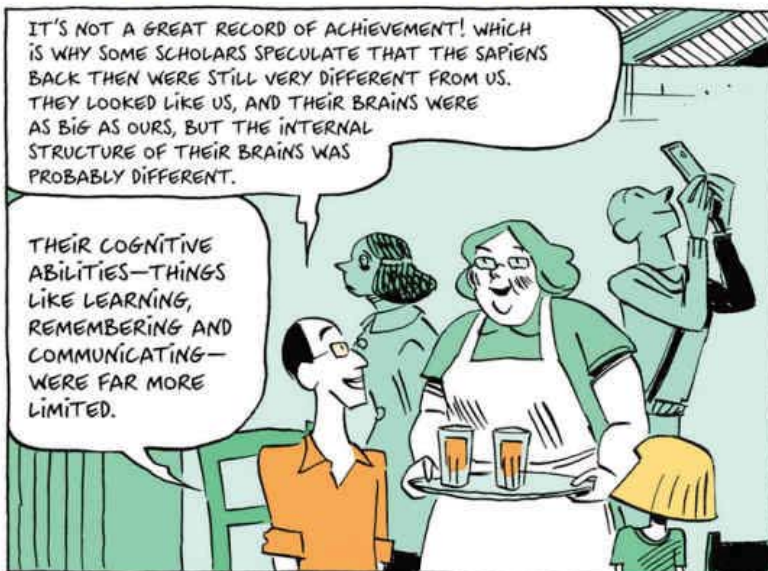
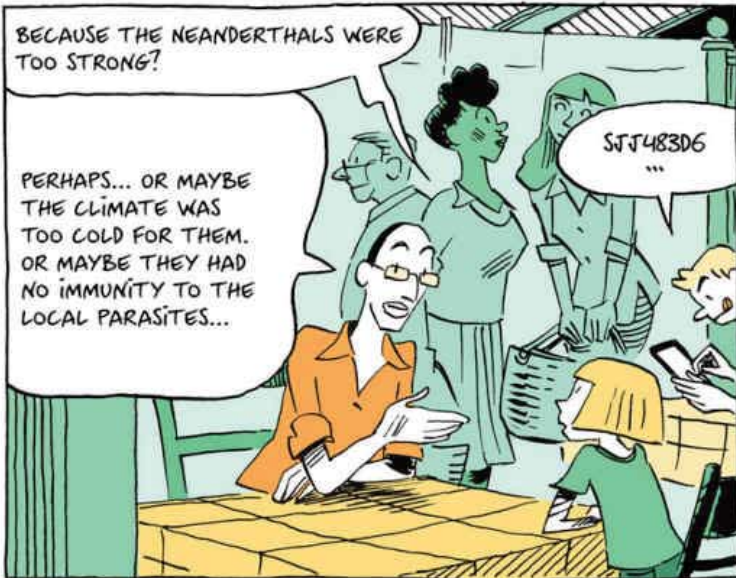
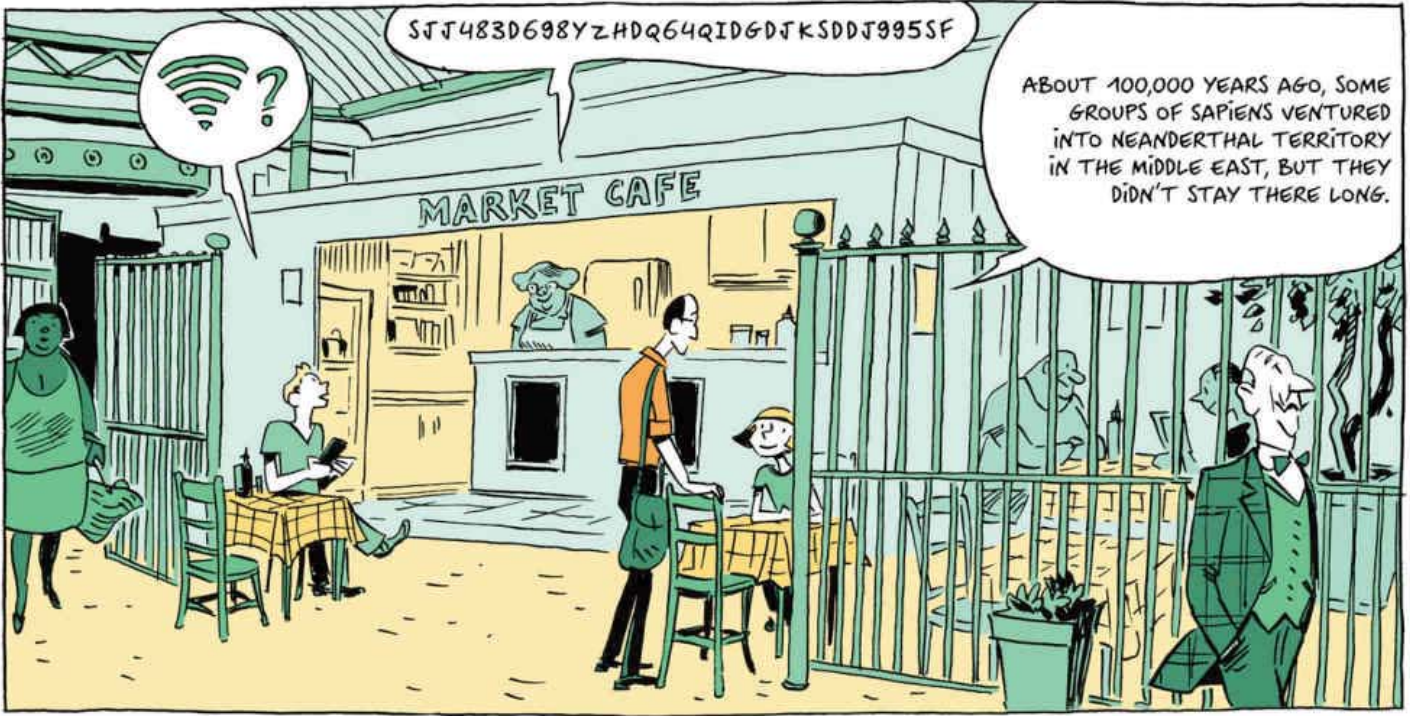


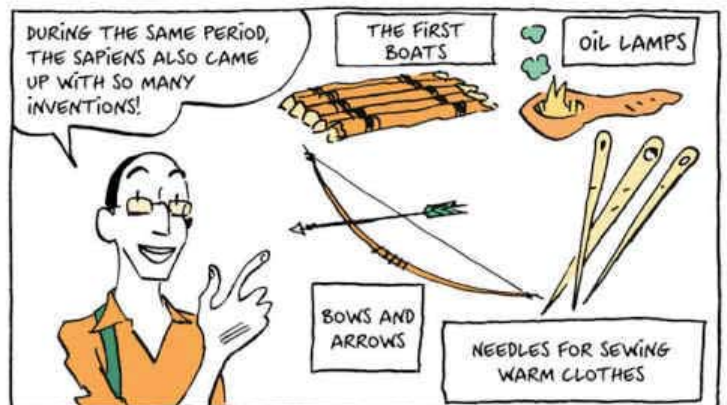
HOW COME EVEN THE MUSCULAR NEANDERTHALS COULDN'T SURVIVE THEIR INVASION?



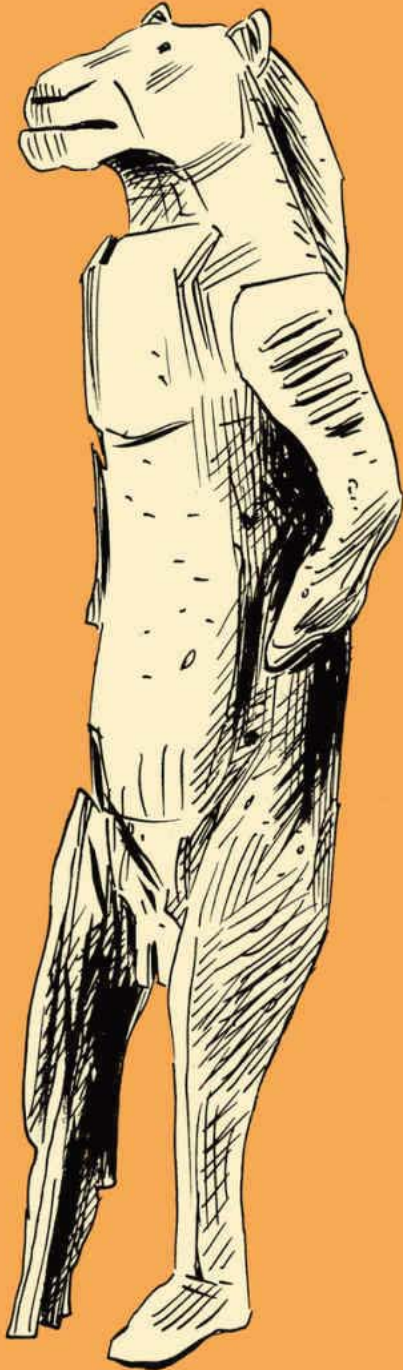
MASTERS OF FICTION





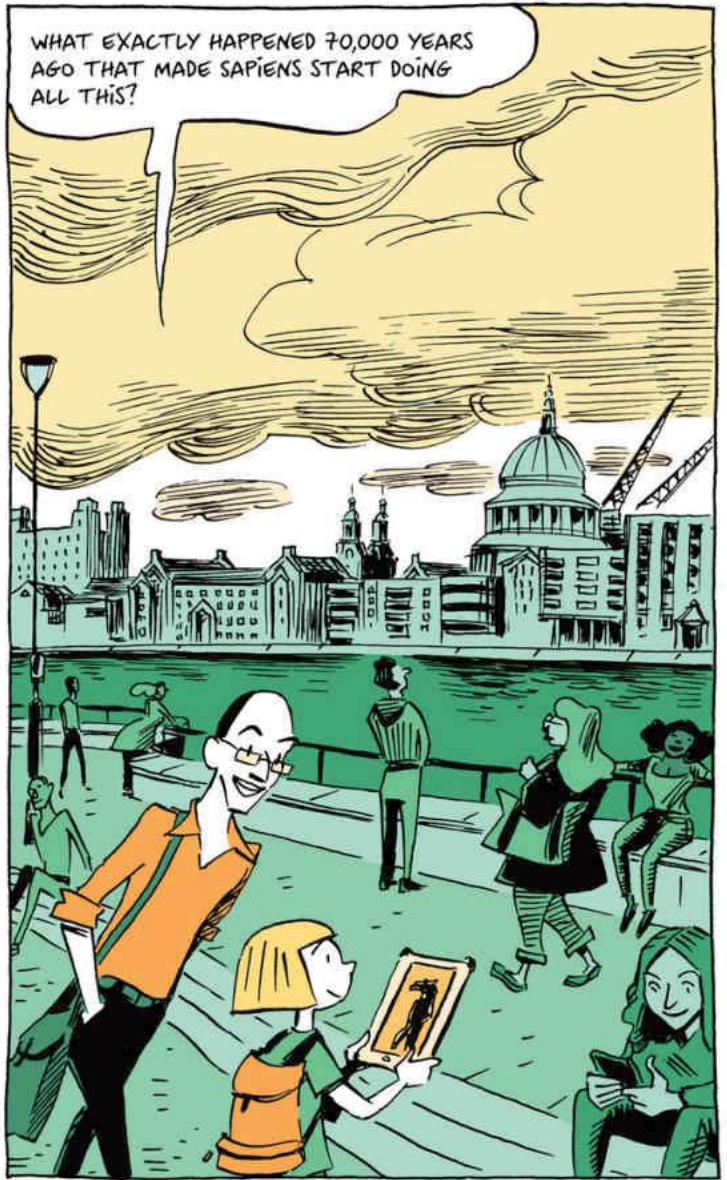


...ALSO, THE FIRST OBJECTS THAT WE CAN RELIABLY CALL ART OR JEWELRY. AND THE FIRST CLEAR EVIDENCE FOR RELIGION, TRADING AND COMPLEX SOCIAL ORDER.



An ivory figurine of a "lion-man" (or "lioness-woman") found in a cave in Stadel, Germany. Approximately 32,000 years old.

WHAT EXACTLY HAPPENED 70,000 YEARS AGO THAT MADE SAPIENS START DOING ALL THIS?



MOST RESEARCHERS SAY IT CAME DOWN TO A REVOLUTION IN SAPIENS' COGNITIVE ABILITIES.





ESPECIALLY THEIR ABILITY TO COMMUNICATE AND WORK TOGETHER IN LARGE NUMBERS. SAPIENS LEARNED TO COOPERATE BETTER THAN ANY OTHER ANIMAL.

BUT ANTS AND BEES COOPERATE TOO, THOUSANDS OF THEM! I DID A SCHOOL PROJECT ABOUT THEM.





BUT SAPIENS CAN COOPERATE
IN ANY NUMBER OF WAYS WITH
COUNTLESS STRANGERS!



OUR CHIMPANZEE COUSINS USUALLY LIVE IN SMALL TROOPS OF SEVERAL DOZEN INDIVIDUALS. THEY FORM CLOSE FRIENDSHIPS, HUNT TOGETHER AND FIGHT SHOULDER-TO-SHOULDER AGAINST BABOONS, CHEETAHS AND ENEMY CHIMPANZES.



THEIR SOCIAL STRUCTURE TENDS TO BE HIERARCHICAL. THE DOMINANT MEMBER, ALMOST ALWAYS A MALE, IS TERMED THE "ALPHA MALE." THE OTHER CHIMPS SHOW SUBMISSION TO THE ALPHA MALE BY BOWING BEFORE HIM.



NOT UNLIKE HUMAN SUBJECTS KNEELING BEFORE A KING.



THE ALPHA MALE TRIES TO MAINTAIN SOCIAL HARMONY WITHIN HIS TROOP. WHEN TWO INDIVIDUALS FIGHT, HE INTERVENES AND STOPS THE VIOLENCE.



HE CAN BE SELFISH TOO. HE MIGHT MONOPOLIZE PARTICULARLY PRIZED FOODS AND PREVENT LOWER-RANKING MALES FROM MATING WITH THE FEMALES.



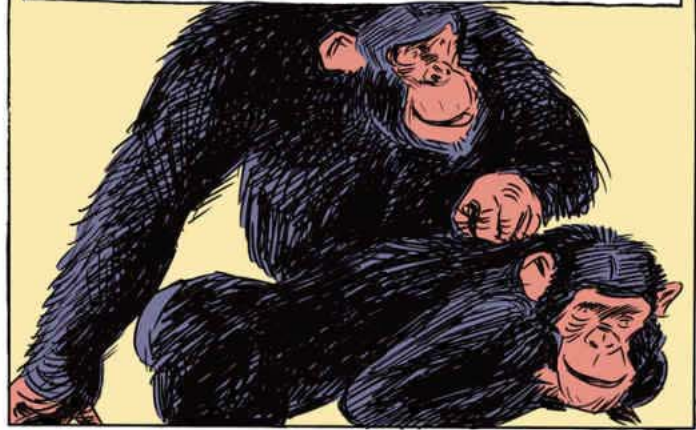
WHEN TWO MALES ARE CONTESTING THE ALPHA POSITION, THEY USUALLY ESTABLISH EXTENSIVE COALITIONS OF SUPPORTERS, BOTH MALE AND FEMALE. TIES BETWEEN COALITION MEMBERS ARE BASED ON INTIMATE DAILY CONTACT—HUGGING, TOUCHING, KISSING, GROOMING AND MUTUAL FAVORS.



A BIT LIKE HUMAN POLITICIANS ON ELECTION CAMPAIGNS GOING AROUND SHAKING HANDS AND KISSING BABIES...



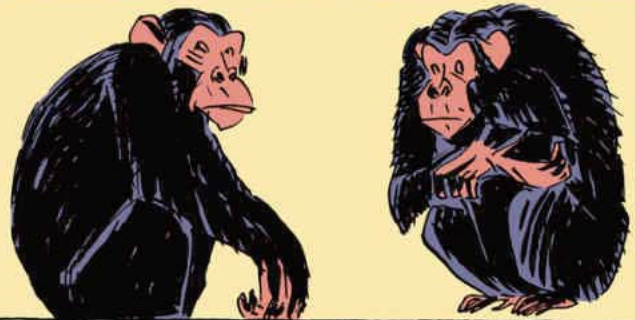
...CONTENDERS FOR THE TOP POSITION IN A CHIMPANZEE GROUP DO A LOT OF HUGGING, BACK-SLAPPING AND KISSING BABY CHIMPS. THE ALPHA MALE USUALLY WINS HIS POSITION NOT BECAUSE HE'S PHYSICALLY STRONGER, BUT BECAUSE HE LEADS A LARGE STABLE COALITION.



THESE COALITIONS ALSO PLAY A CENTRAL PART IN DAY-TO-DAY ACTIVITIES. MEMBERS OF A COALITION SPEND MORE TIME TOGETHER, SHARE FOOD AND HELP ONE ANOTHER.



THERE ARE CLEAR LIMITS TO THE SIZE OF THESE GROUPS. FOR A GROUP TO FUNCTION, ALL ITS MEMBERS MUST KNOW EACH OTHER INTIMATELY. TWO CHIMPANZEE WHO'VE NEVER MET WON'T KNOW WHETHER THEY CAN TRUST ONE ANOTHER, WHETHER IT'S WORTH HELPING ONE ANOTHER AND WHICH OF THEM RANKS HIGHER.



UNDER NATURAL CONDITIONS, A TYPICAL CHIMPANZEE TROOP NUMBERS PERHAPS 20 TO 50 INDIVIDUALS. AS A TROOP GETS BIGGER, THE SOCIAL ORDER DESTABILIZES, EVENTUALLY LEADING TO A SPLIT WITH SOME OF THE ANIMALS FORMING A BREAKAWAY TROOP.



ZOOLOGISTS HAVE SEEN ONLY A HANDFUL OF GROUPS LARGER THAN 100. SEPARATE GROUPS SELDOM COOPERATE, AND TEND TO COMPETE FOR TERRITORY AND FOOD. RESEARCHERS HAVE DOCUMENTED PROLONGED WARFARE BETWEEN GROUPS, AND EVEN ONE CASE OF "GENOCIDAL" ACTIVITY WHEN ONE TROOP SYSTEMATICALLY SLAUGHTERED MOST MEMBERS OF A NEIGHBORING BAND.



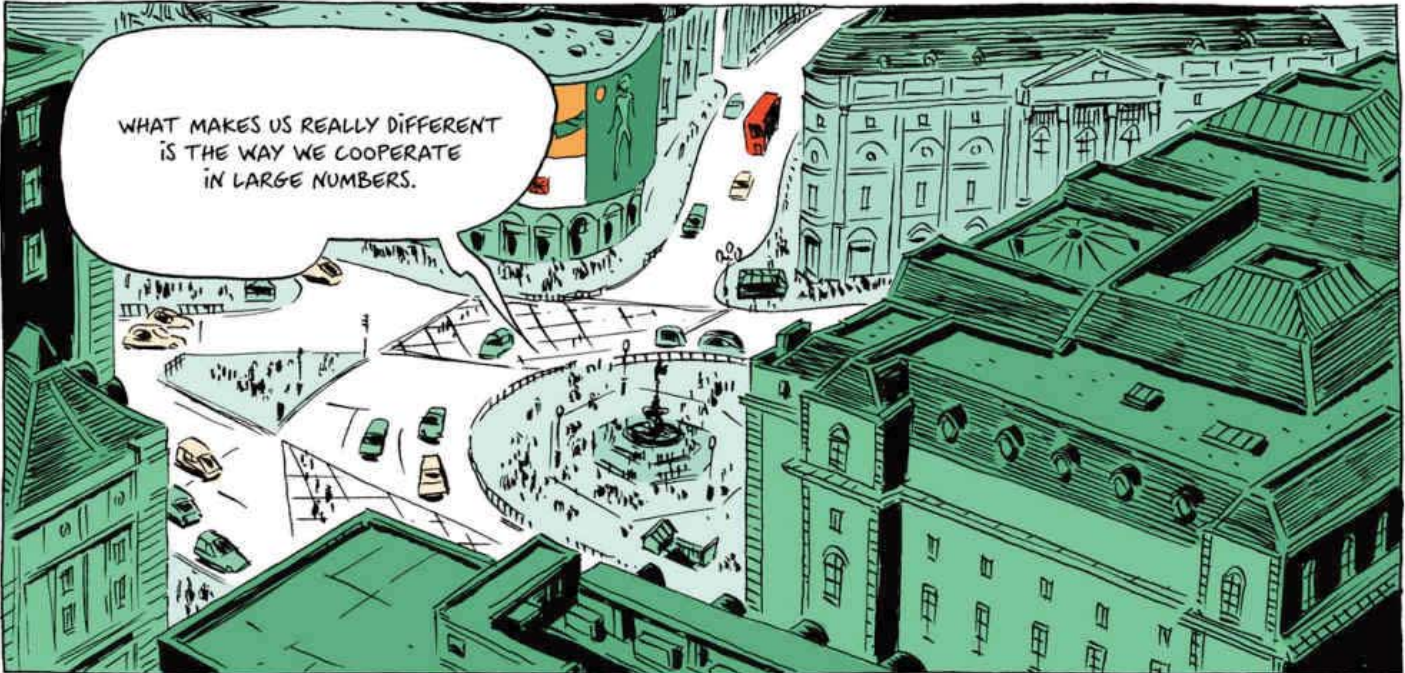
ANCIENT HUMANS WERE MUCH LIKE CHIMPANZEES. EVEN TODAY, WE SAPIENS ARE STILL EMBARRASSINGLY SIMILAR TO CHIMPANZEES—AS INDIVIDUALS AND IN FAMILIES.



BUT IT'S POINTLESS LOOKING FOR DIFFERENCES BETWEEN SAPIENS AND OTHER ANIMALS AT THE LEVEL OF INDIVIDUALS OR FAMILIES.



WHAT MAKES US REALLY DIFFERENT IS THE WAY WE COOPERATE IN LARGE NUMBERS.



IMAGINE THE PANDEMONIUM IF YOU TRIED TO BUNCH TOGETHER THOUSANDS OF CHIMPANZEES IN MARACANA STADIUM, WALL STREET, THE VATICAN OR THE BRITISH HOUSES OF PARLIAMENT...



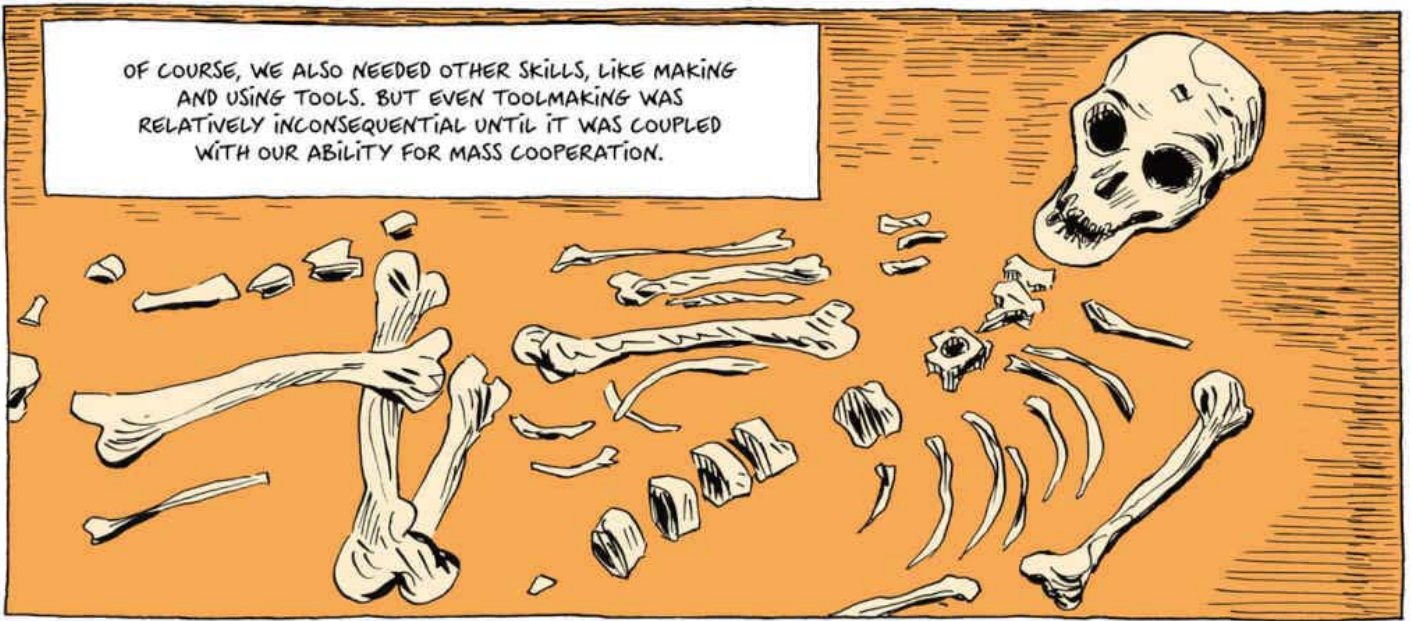
AND YET SAPIENS REGULARLY GATHER IN THEIR THOUSANDS IN PLACES LIKE THESE. TOGETHER, THEY CAN SET UP ORDERLY SYSTEMS OF COOPERATION SUCH AS TRADE NETWORKS, MASS CELEBRATIONS AND POLITICAL INSTITUTIONS.



THE REAL DIFFERENCE BETWEEN US AND CHIMPANZEES IS THE MYSTERIOUS GLUE THAT BINDS LARGE NUMBERS OF INDIVIDUALS, FAMILIES AND GROUPS. THIS GLUE MADE US THE MASTERS OF THE WORLD.



OF COURSE, WE ALSO NEEDED OTHER SKILLS, LIKE MAKING AND USING TOOLS. BUT EVEN TOOLMAKING WAS RELATIVELY INCONSEQUENTIAL UNTIL IT WAS COUPLED WITH OUR ABILITY FOR MASS COOPERATION.



HOW COME TODAY WE HAVE THIS....

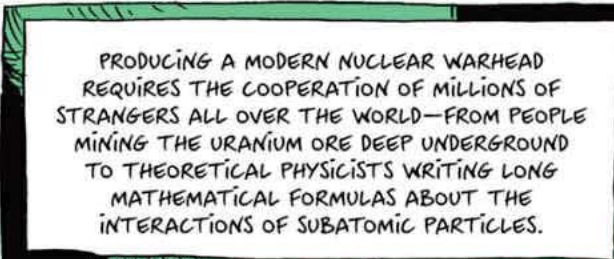
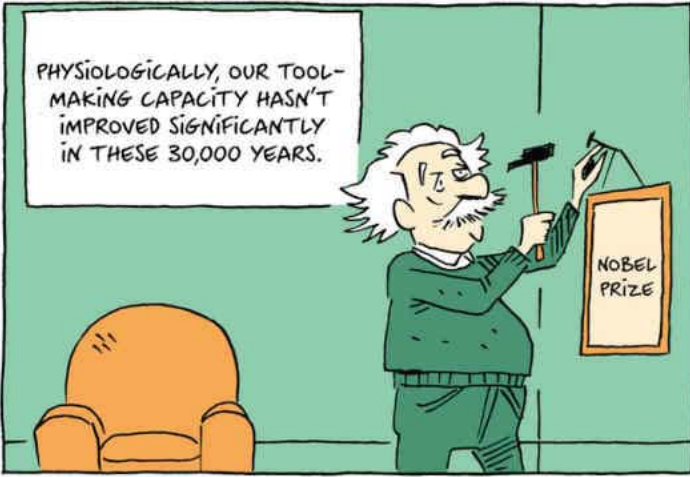
SATAN 2 MISSILE. CAPABLE OF DESTROYING NEW YORK OR MOSCOW.



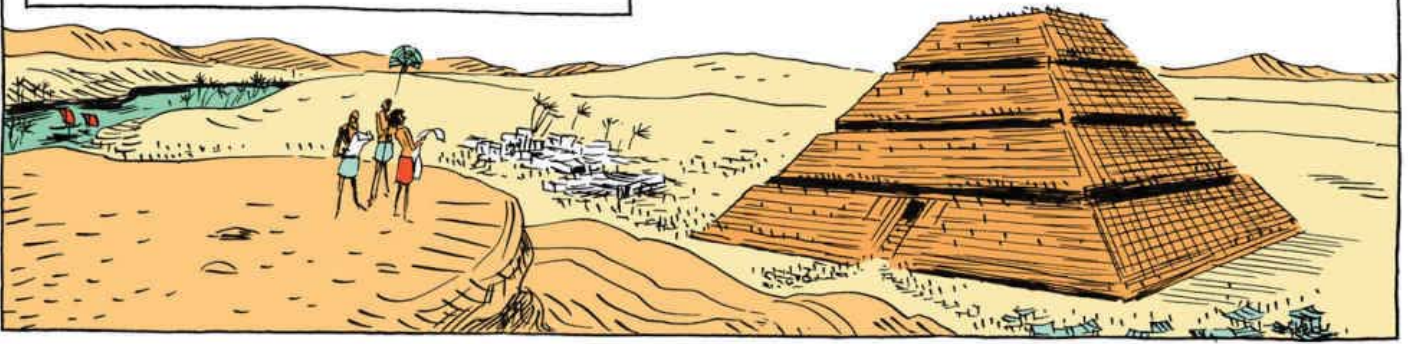
...WHEN 30,000 YEARS AGO, ALL WE HAD WAS THIS?

SPEAR WITH STONE POINT. CAPABLE OF KILLING A ZEBRA.





ALL OF HOMO SAPIENS' GREAT ACHIEVEMENTS—FROM BUILDING THE PYRAMIDS TO LANDING ON THE MOON—ARE BASED ON LARGE-SCALE COOPERATION.



THAT MAKES SENSE.

BUT HOW COME SAPIENS CAN COOPERATE IN SUCH BIG NUMBERS?

IT'S ALL DOWN TO THOSE NEW COMMUNICATION SKILLS THAT SAPIENS STARTED USING ABOUT 70,000 YEARS AGO.



OKAY, SO WHAT ARE THESE SUPER-SPECIAL COMMUNICATION SKILLS?

IF YOU LIKE, WE COULD PAY A VISIT TO PROFESSOR ROBIN DUNBAR...



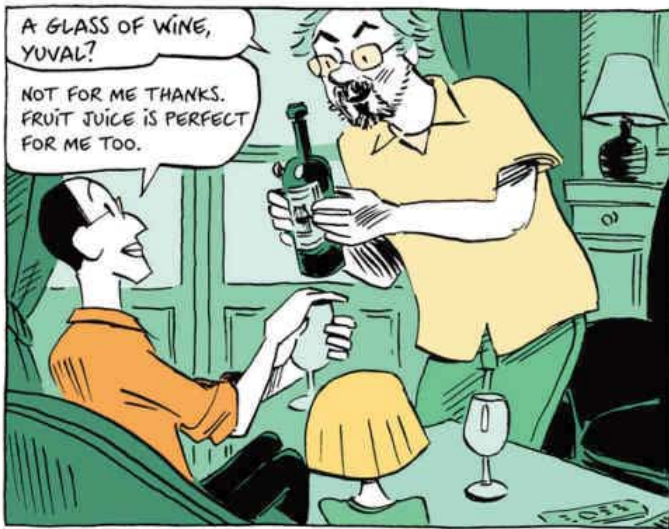


LATER, AT PROFESSOR DUNBAR'S HOME....

EXCELLENT IDEA TO COME AND VISIT ME WITH YOUR NIECE, MY DEAR YUVAL!

WOULD YOU LIKE A FRUIT JUICE, ZOE?

YES PLEASE, PROFESSOR.



A GLASS OF WINE, YUVAL?
NOT FOR ME THANKS. FRUIT JUICE IS PERFECT FOR ME TOO.



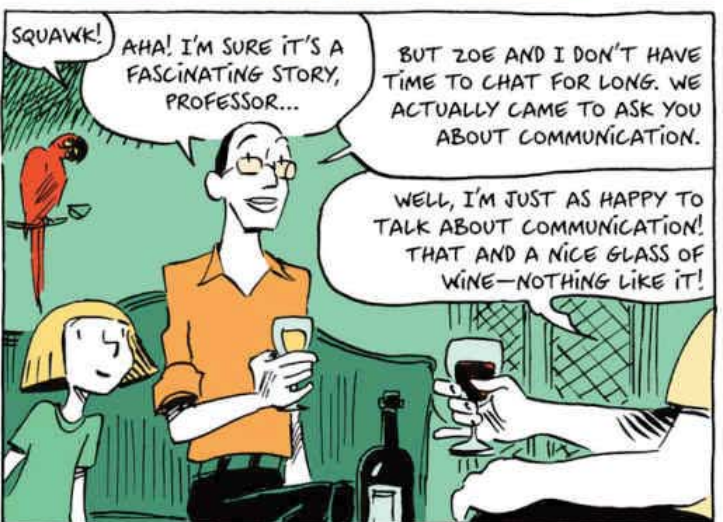
I'LL HAVE A LITTLE GRAPE JUICE MYSELF, HA! HA!

HAVE YOU HEARD THE LATEST SCANDAL IN THE PSYCHOLOGY DEPARTMENT?

NO, CAN'T SAY I HAVE...



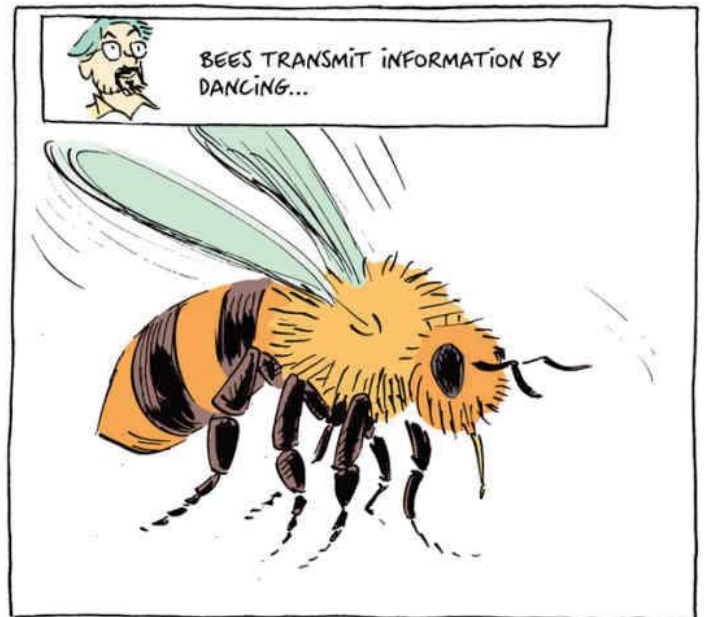
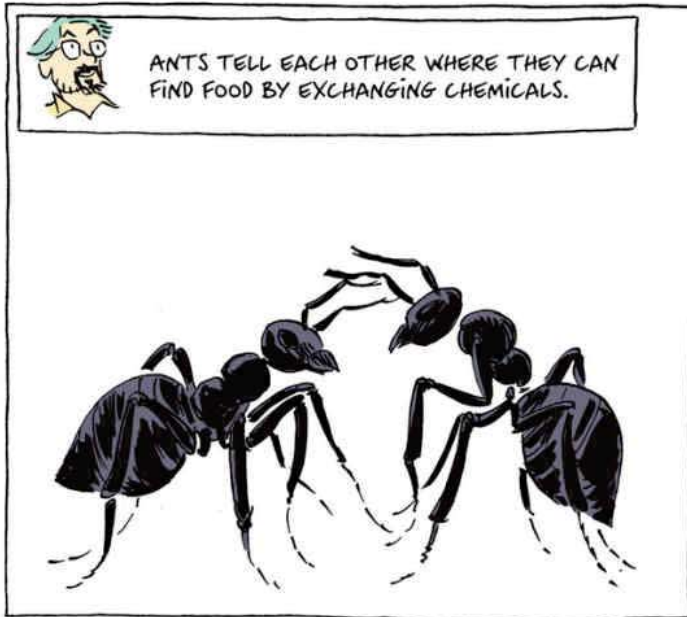
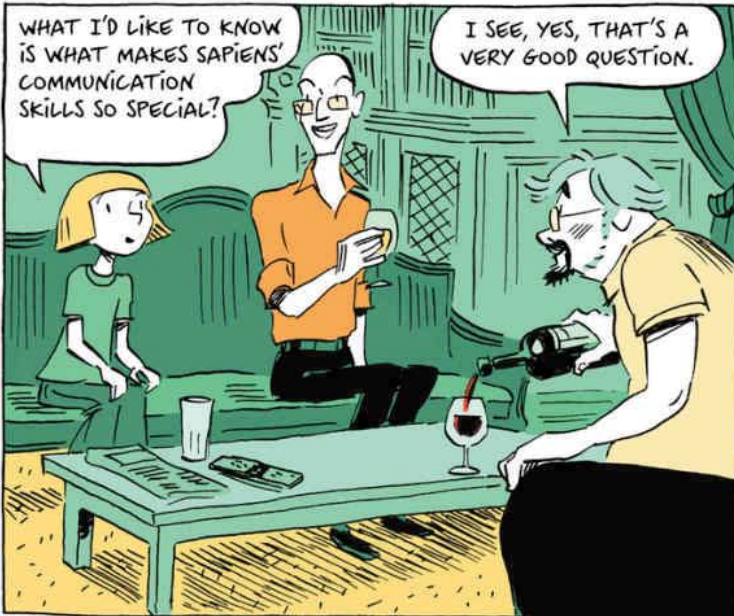
REALLY?! YOU WON'T BELIEVE THIS! LESLIE AND BRANDON HAVE SPLIT UP! SHE CAUGHT HIM IN THE PUB WITH A GIRL YOUNG ENOUGH TO BE HIS DAUGHTER! IT'S ALL ANYONE CAN TALK ABOUT IN THE CAFETERIA!



SQUAWK! AHA! I'M SURE IT'S A FASCINATING STORY, PROFESSOR...

BUT ZOE AND I DON'T HAVE TIME TO CHAT FOR LONG. WE ACTUALLY CAME TO ASK YOU ABOUT COMMUNICATION.

WELL, I'M JUST AS HAPPY TO TALK ABOUT COMMUNICATION! THAT AND A NICE GLASS OF WINE—NOTHING LIKE IT!



LOTS OF ANIMALS, INCLUDING ALL APE AND MONKEY SPECIES, USE VOCAL SIGNALS. ZOOLOGISTS HAVE STUDIED THE DIFFERENT SIGNALS THAT GREEN MONKEYS COMMUNICATE WITH.

KYAK! KYAK!
KYAK! KYAK!*

*WATCH OUT, A LION!

Yi-AAKH!
Yi-AAKH*

*WATCH OUT! AN EAGLE!

LOOK WHAT HAPPENED WHEN RESEARCHERS PLAYED RECORDINGS OF THESE TWO WARNINGS TO A GROUP OF MONKEYS...

Yi-AAKH!
Yi-AAKH*

KYAK! KYAK!
KYAK!

SAPIENS CAN PRODUCE MANY MORE DISTINCT SOUNDS THAN GREEN MONKEYS, BUT IT ISN'T THESE VOCAL SKILLS THEMSELVES THAT MAKE US SO SPECIAL.

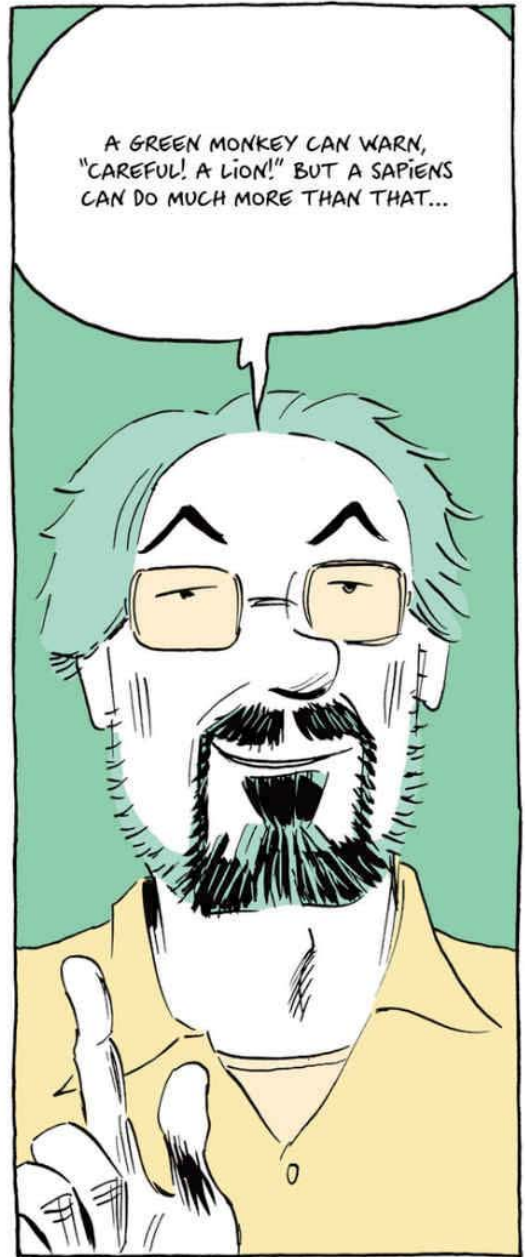
MY PARROTS CAN MIMIC ALL THE SOUNDS I MAKE, AND PLENTY OF OTHERS THAT I CAN'T!

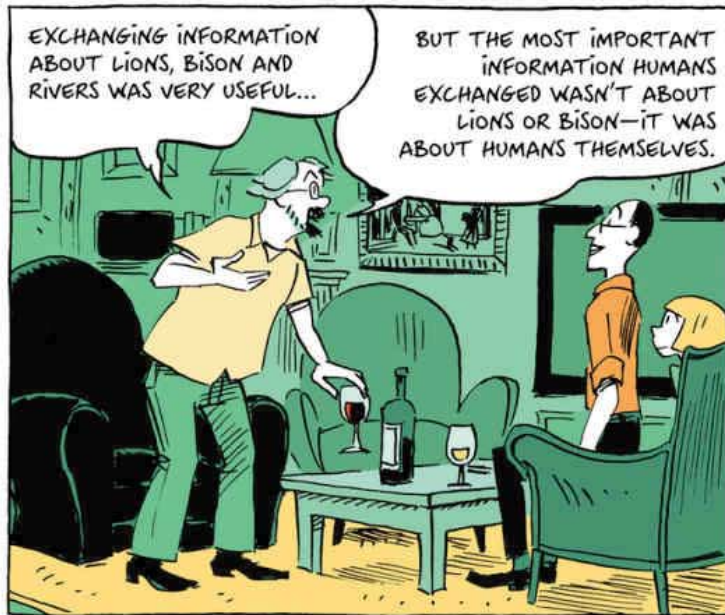
MIMIC ALL THE SOUNDZZZZ!

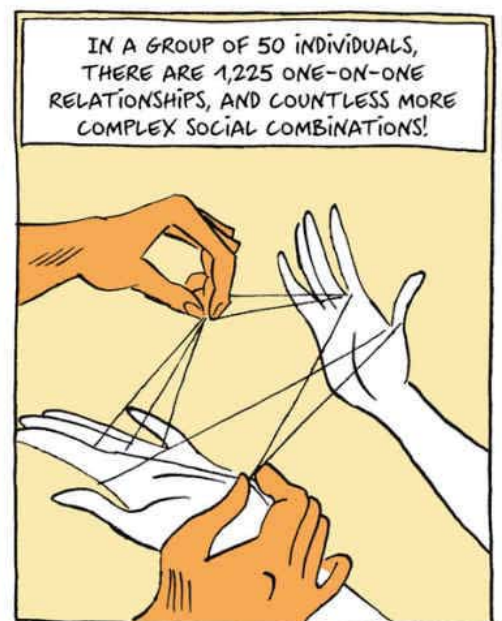
DING DONG!

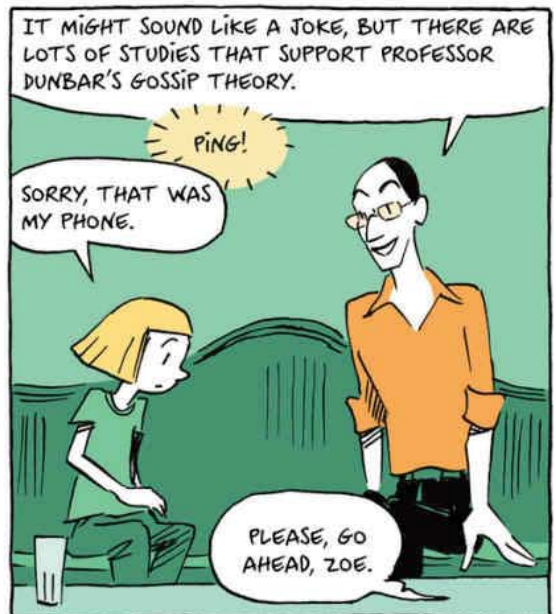
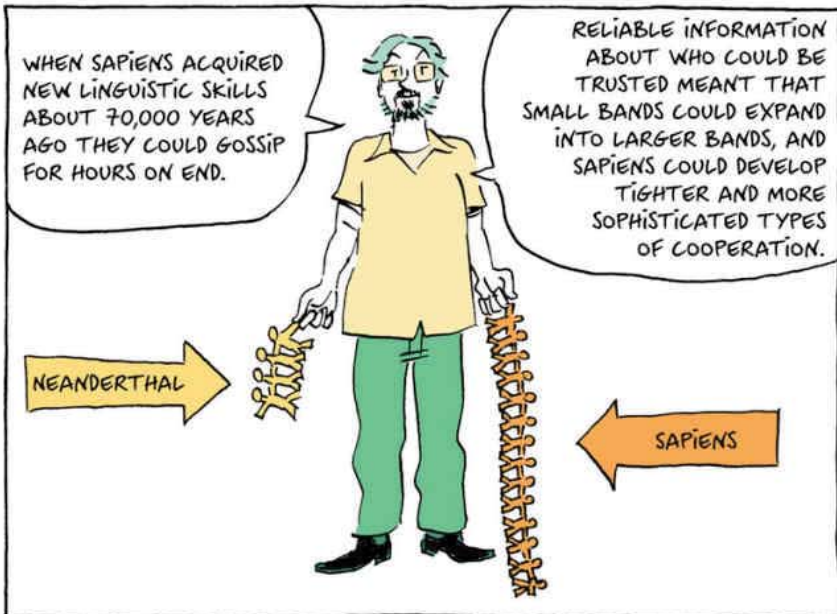
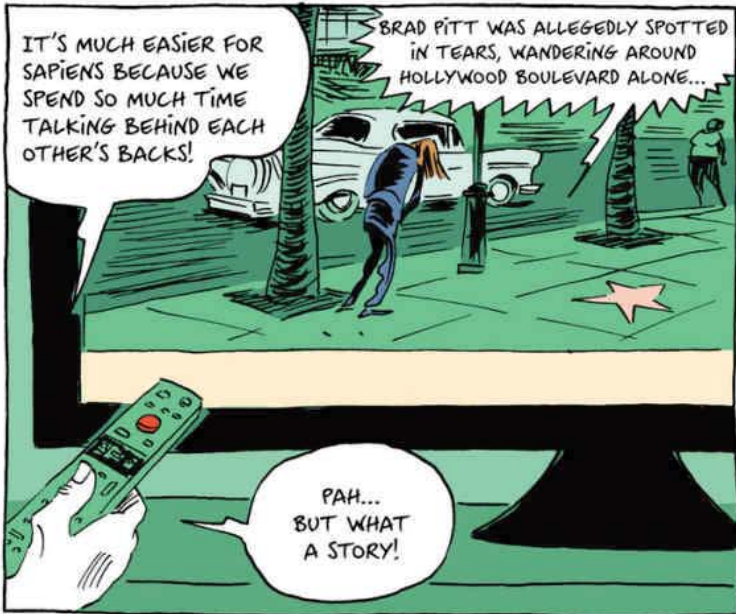
JUST A MINUTE, THERE'S SOMEONE AT THE DOOR.

HA! HA!









DO YOU REALLY THINK THAT WHEN HISTORY PROFESSORS MEET FOR LUNCH THEY TALK ABOUT WHAT SPARKED WORLD WAR I?



OR NUCLEAR PHYSICISTS SPEND THEIR COFFEE BREAKS AT SCIENTIFIC CONFERENCES TALKING ABOUT QUARKS?



THEY'RE FAR MORE LIKELY TO GOSSIP ABOUT THE PROFESSOR WHO CAUGHT HER HUSBAND CHEATING, OR THE QUARREL BETWEEN THE HEAD OF THE DEPARTMENT AND THE DEAN.



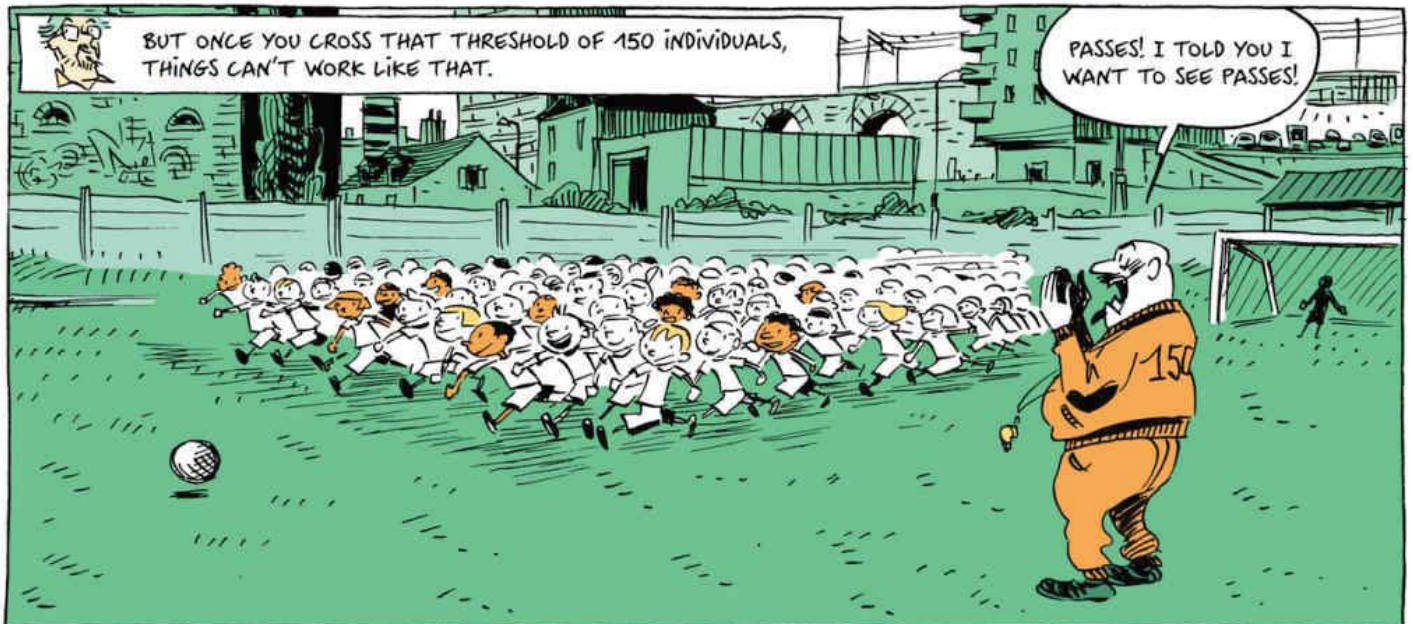
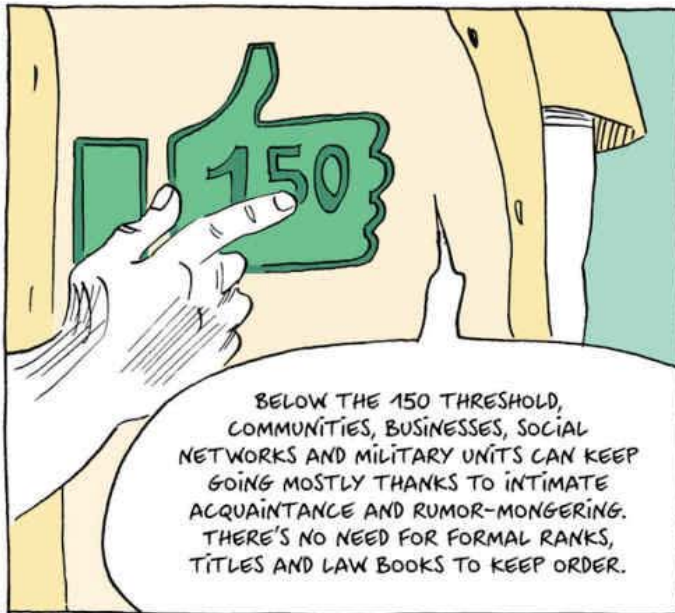
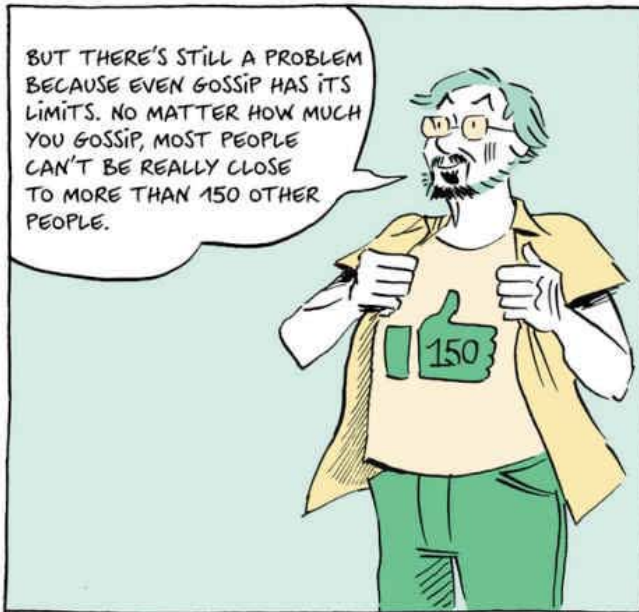
OR RUMORS THAT A COLLEAGUE USED HIS RESEARCH FUNDS TO BUY A LEXUS.

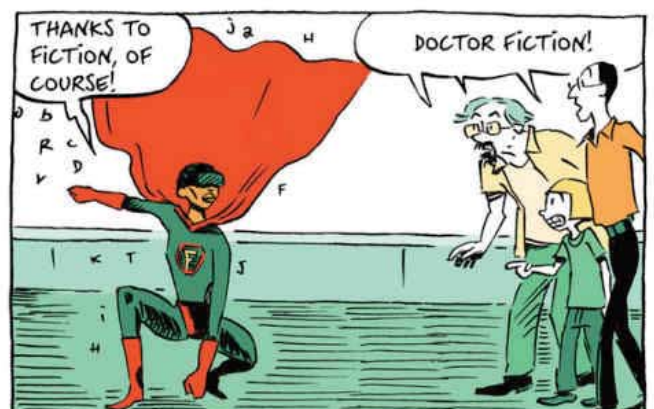
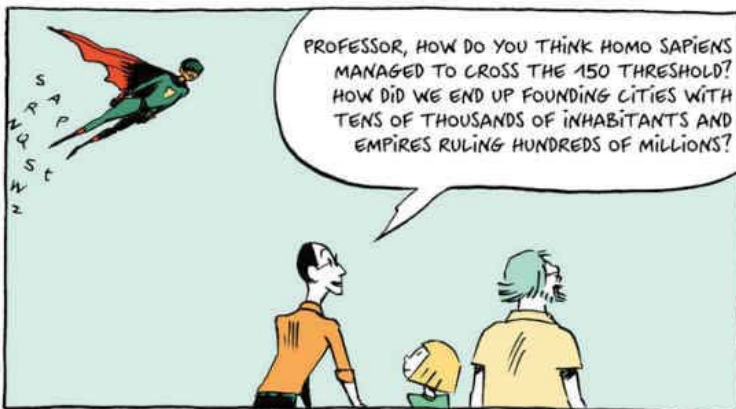
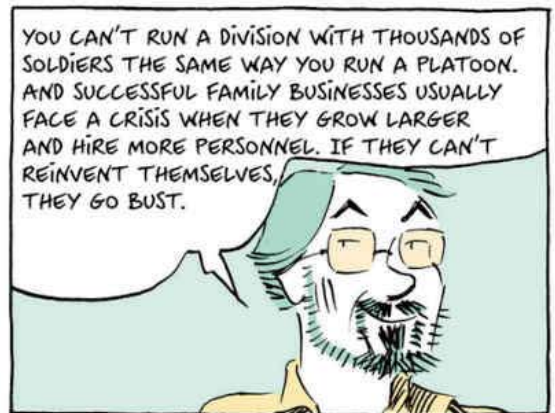


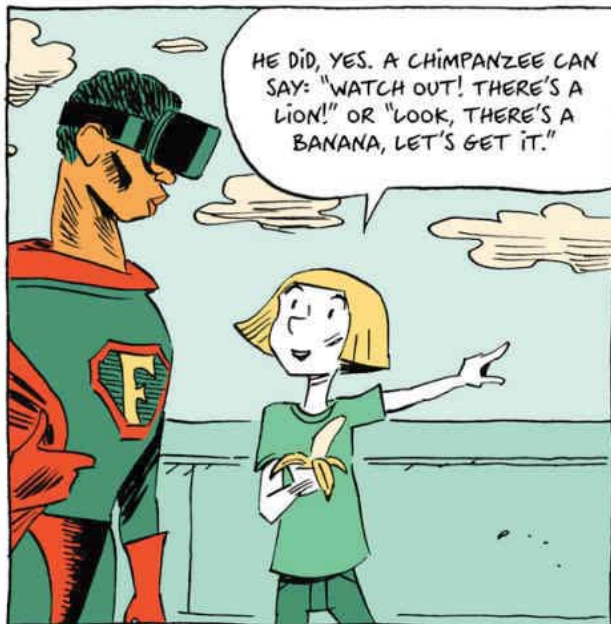
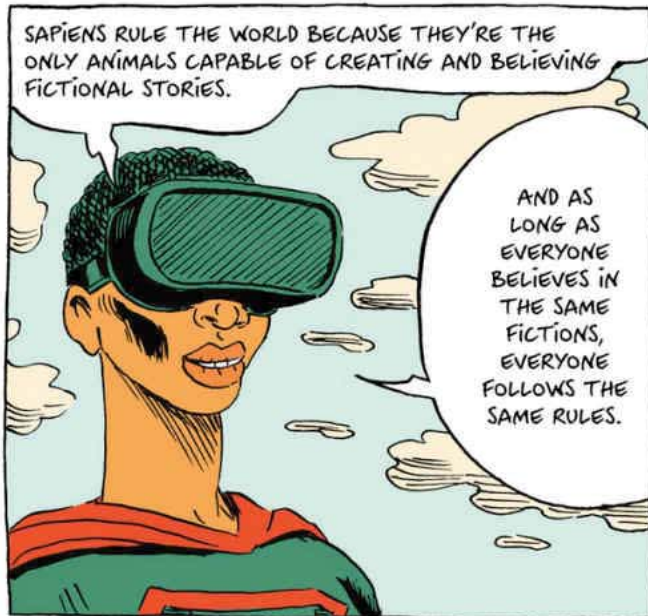
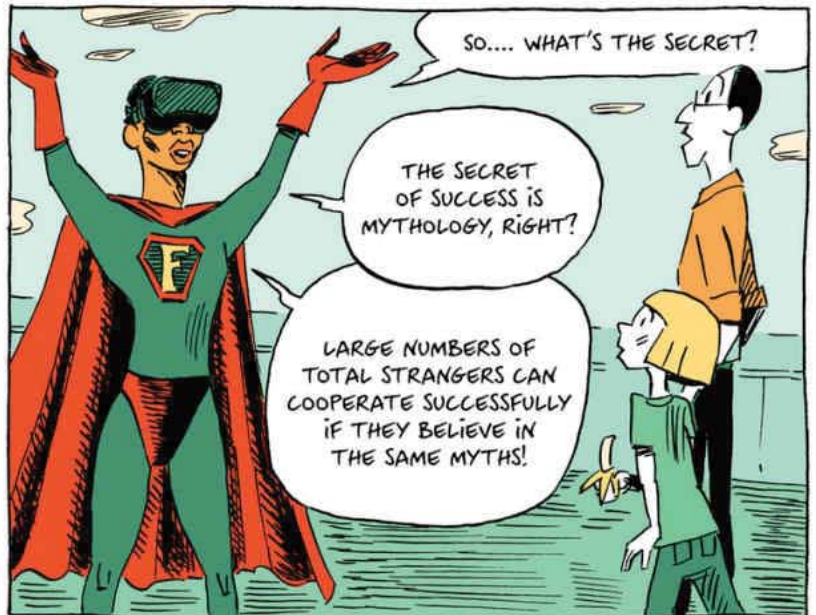
GOSSIP USUALLY FOCUSES ON WRONGDOINGS, SO IT HELPS ENFORCE SOCIAL NORMS AND MAINTAIN GROUP COHESION



INSPIRED BY NORMAN ROCKWELL









A SAPIENS CAN SAY "LOOK UP THERE! THERE'S A GOD ABOVE THE CLOUDS AND HE'LL PUNISH YOU IF YOU DON'T DO AS I SAY."

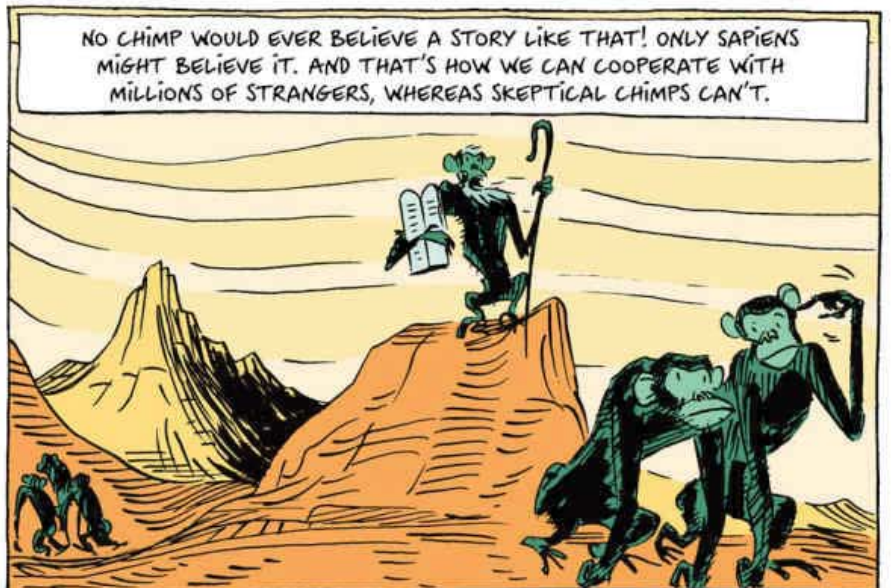


AND IF YOU ALL BELIEVE IN THAT STORY, THEN YOU'LL ALL FOLLOW THE SAME LAWS AND RULES, SO YOU'LL BE ABLE TO COOPERATE EFFECTIVELY, EVEN IF YOU DON'T KNOW EACH OTHER.

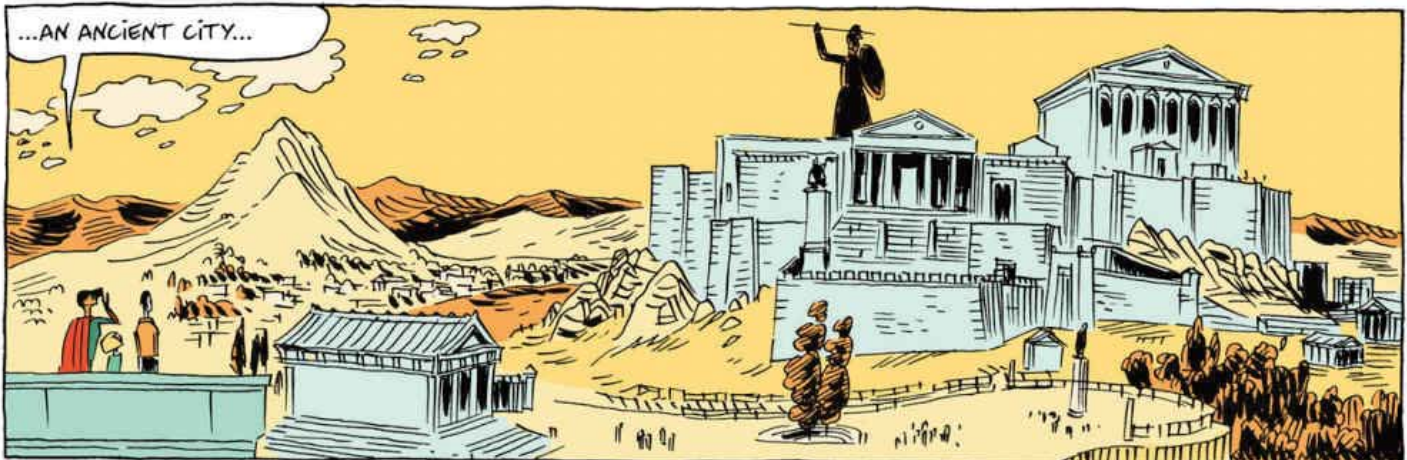


THAT'S SOMETHING ONLY SAPIENS CAN DO.

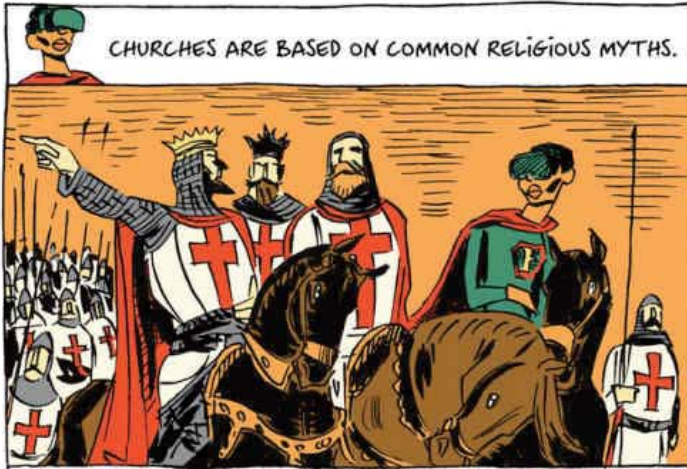
YOU COULD NEVER CONVINCE A CHIMPANZEE TO GIVE YOU A BANANA BY PROMISING HIM UNLIMITED BANANAS IN APE HEAVEN.



NO CHIMP WOULD EVER BELIEVE A STORY LIKE THAT! ONLY SAPIENS MIGHT BELIEVE IT. AND THAT'S HOW WE CAN COOPERATE WITH MILLIONS OF STRANGERS, WHEREAS SKEPTICAL CHIMPS CAN'T.



CHURCHES ARE BASED ON COMMON RELIGIOUS MYTHS.



TWO CATHOLICS WHO'VE NEVER MET MIGHT GO ON CRUSADE TOGETHER OR POOL FUNDS TO BUILD A HOSPITAL BECAUSE THEY BOTH BELIEVE THAT GOD WAS INCARNATED IN HUMAN FLESH AND ALLOWED HIMSELF TO BE CRUCIFIED TO REDEEM OUR SINS.

STATES ARE ROOTED IN COMMON NATIONAL MYTHS.



A WELSHMAN AND AN ENGLISHMAN WHO'VE NEVER MET MIGHT RISK THEIR LIVES TO SAVE EACH OTHER BECAUSE THEY BOTH BELIEVE IN GREAT BRITAIN.

JUDICIAL SYSTEMS ARE ROOTED IN COMMON LEGAL MYTHS.



TWO LAWYERS WHO'VE NEVER MET MIGHT WORK TOGETHER TO DEFEND A COMPLETE STRANGER BECAUSE THEY BOTH BELIEVE IN LAWS, JUSTICE, HUMAN RIGHTS—AND THE MONEY PAID OUT IN FEES.

YET NONE OF THESE THINGS EXISTS OUTSIDE THE STORIES THAT PEOPLE INVENT AND TELL ONE ANOTHER.

CAPE CANAVERAL TO EXPLORER 412. SO? HAVE YOU FOUND ANY GODS, NATIONS OR HUMAN RIGHTS?

EXPLORER 412 TO CAPE CANAVERAL: NOT REALLY....



WHAT ABOUT JUSTICE AND MONEY?

NO... BUT WE HAVE FOUND A WHOLE LOT OF HYDROGEN....

PEOPLE EASILY GET THE IDEA THAT "PRIMITIVE TRIBES" CEMENT THEIR SOCIAL ORDER BY BELIEVING IN IMAGINARY SPIRITS.



WHAT WE DON'T REALIZE IS THAT OUR MODERN INSTITUTIONS FUNCTION IN EXACTLY THE SAME WAY!

STOP CUTTING DOWN TREES. YOU'LL ANGER THE SPIRITS OF THE FOREST!

OF COURSE, OF COURSE...

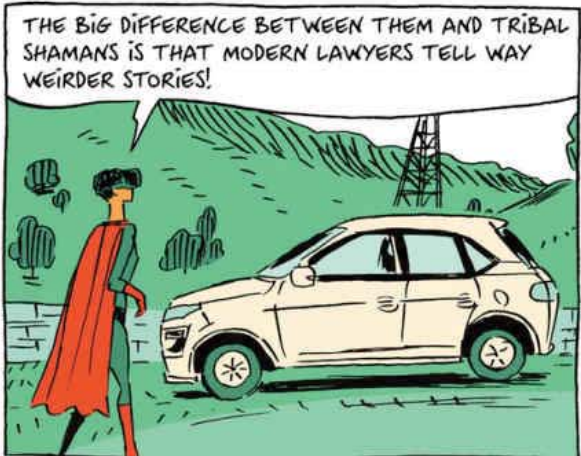
BUT WE MUSTN'T ANGER THE SPIRITS OF THE STOCK MARKET EITHER, I'M SURE YOU UNDERSTAND...





MODERN FIRMS AREN'T SO VERY DIFFERENT FROM ANCIENT TRIBES.

MODERN BUSINESS-PEOPLE AND LAWYERS ARE, IN FACT, POWERFUL SORCERERS!



THE BIG DIFFERENCE BETWEEN THEM AND TRIBAL SHAMANS IS THAT MODERN LAWYERS TELL WAY WEIRDER STORIES!



I CAN EXPLAIN ALL THIS WITH A NICE EXAMPLE.

LOOK AT MY CAR... IT'S A PEUGEOT.



YOU CAN TELL FROM ITS LOGO, HERE.

REMINDE YOU OF ANYTHING, HUH?



WAIT, I'LL REFRESH YOUR MEMORY...



HEY! HELLO THERE, DOCTOR FICTION!

HELLO, BILL!

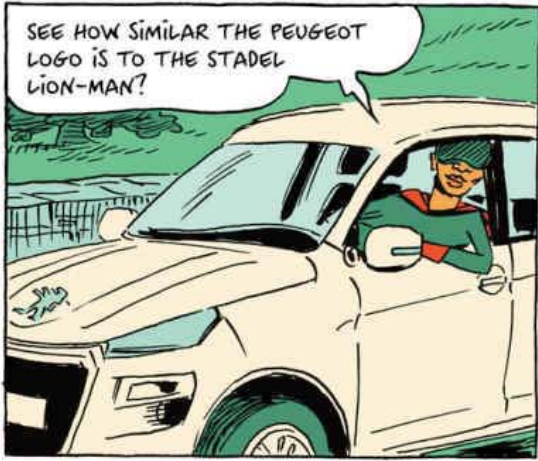


WHERE ARE YOU HEADED?

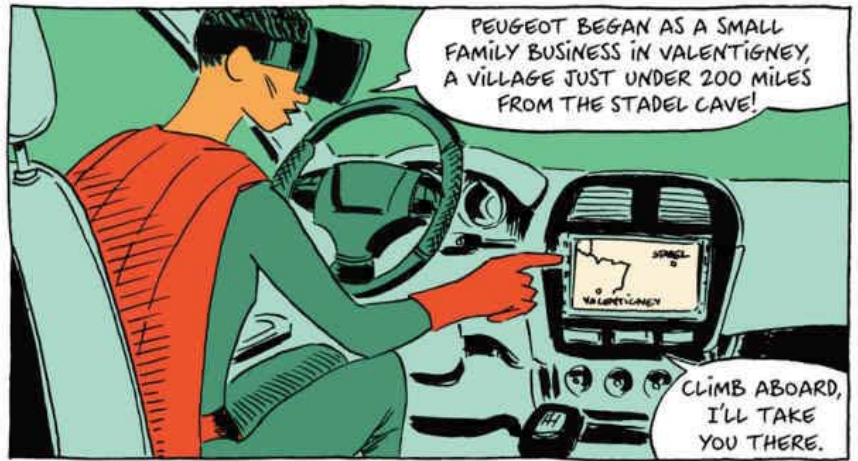
I'M DRIVING BACK TO THE CAVE. THERE'S A WAY TO GO BEFORE I REACH STADEL....



GOT TO GO! SEE YOU SOON, DOC!

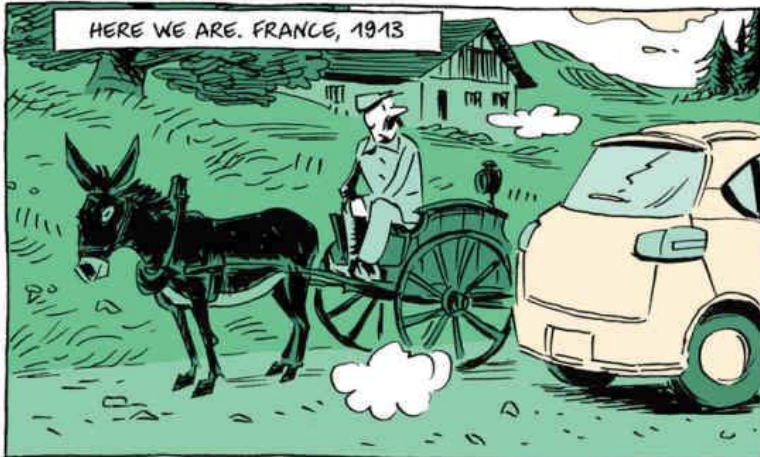


SEE HOW SIMILAR THE PEUGEOT LOGO IS TO THE STADEL LION-MAN?



PEUGEOT BEGAN AS A SMALL FAMILY BUSINESS IN VALENTIGNEY, A VILLAGE JUST UNDER 200 MILES FROM THE STADEL CAVE!

CLIMB ABOARD, I'LL TAKE YOU THERE.

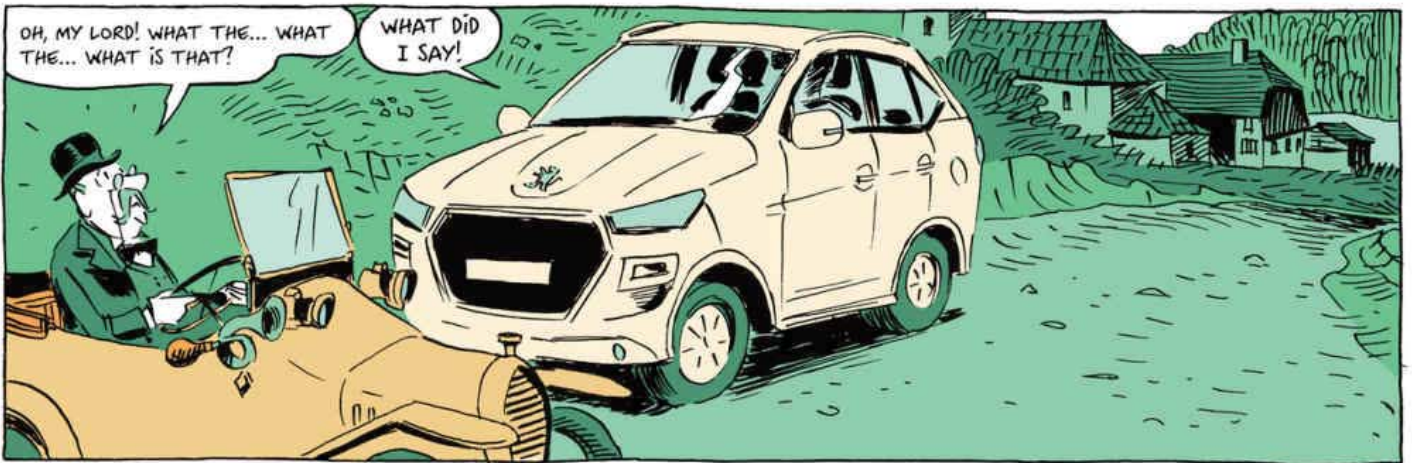


HERE WE ARE. FRANCE, 1913



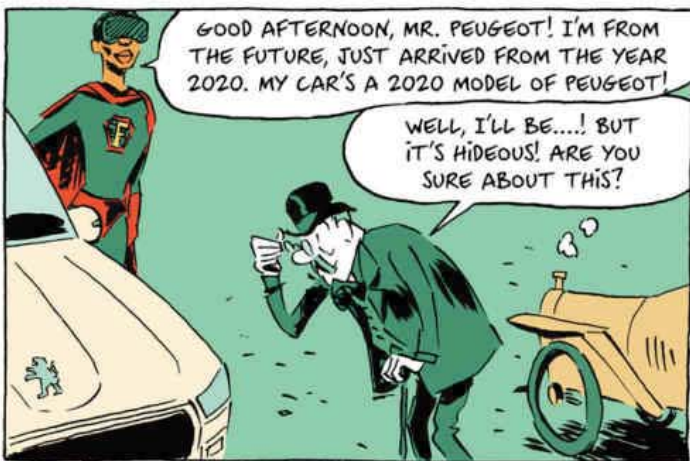
AH, GREAT TIMING! THIS IS ARMAND PEUGEOT, THE FOUNDING FATHER, OUT FOR A RIDE...

HE'LL NOTICE MY CAR, FOR SURE.



OH, MY LORD! WHAT THE... WHAT THE... WHAT IS THAT?

WHAT DID I SAY!



GOOD AFTERNOON, MR. PEUGEOT! I'M FROM THE FUTURE, JUST ARRIVED FROM THE YEAR 2020. MY CAR'S A 2020 MODEL OF PEUGEOT!

WELL, I'LL BE....! BUT IT'S HIDEOUS! ARE YOU SURE ABOUT THIS?



OF COURSE. LOOK, THE LION EMBLEM'S STILL THERE.

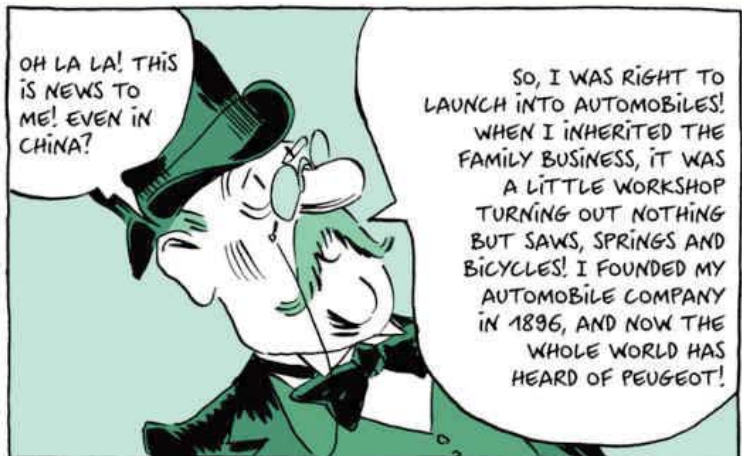
UPON MY WORD, YOU'RE RIGHT...



BUT... WHEN YOU SAY YOU'RE FROM THE YEAR 2020... ARE YOU TELLING ME MY LITTLE BUSINESS OUTLIVES ME?

OH, AND HOW, MR. PEUGEOT!
IN 2020, THERE ARE PEUGEOT VEHICLES PRETTY MUCH ALL OVER THE WORLD, FROM SYDNEY TO TOKYO! YOUR COMPANY HAS FACTORIES EVERYWHERE—EVEN IN CHINA—AND SELLS MORE THAN 1.5 MILLION CARS EVERY YEAR.

IT EMPLOYS MORE THAN 200,000 PEOPLE, AND HAS AN ANNUAL TURNOVER OF NEARLY 75 BILLION EUROS!



OH LA LA! THIS IS NEWS TO ME! EVEN IN CHINA!

SO, I WAS RIGHT TO LAUNCH INTO AUTOMOBILES! WHEN I INHERITED THE FAMILY BUSINESS, IT WAS A LITTLE WORKSHOP TURNING OUT NOTHING BUT SAWS, SPRINGS AND BICYCLES! I FOUNDED MY AUTOMOBILE COMPANY IN 1896, AND NOW THE WHOLE WORLD HAS HEARD OF PEUGEOT!



YES, YOU STARTED A VERY POWERFUL STORY!

WHAT DO YOU MEAN, A STORY?! THE IMPUDENCE! PEUGEOT ISN'T A STORY!



OKAY, WHAT IS IT, THEN?



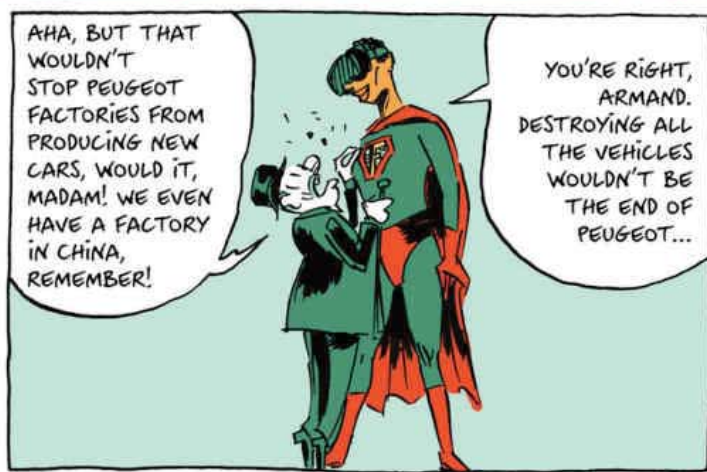
WELL, BY ALL THAT'S HOLY, PEUGEOT IS CARS! MILLIONS OF THEM—YOU TOLD ME YOURSELF!

I DID...



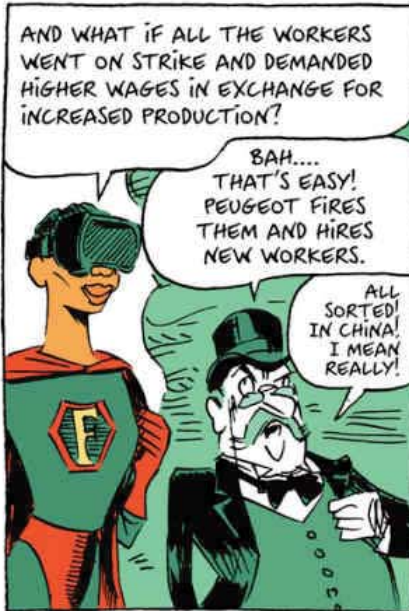
BUT JUST IMAGINE... WHAT WOULD HAPPEN TO PEUGEOT IF ALL THE CARS WERE SUDDENLY SENT TO THE SCRAPYARD? BECAUSE OF SOME NEW ENVIRONMENTAL REGULATION, SAY...

AAAH! WHAT A MONSTROUS IDEA!



AHA, BUT THAT WOULDN'T STOP PEUGEOT FACTORIES FROM PRODUCING NEW CARS, WOULD IT, MADAM! WE EVEN HAVE A FACTORY IN CHINA, REMEMBER!

YOU'RE RIGHT, ARMAND. DESTROYING ALL THE VEHICLES WOULDN'T BE THE END OF PEUGEOT...



AND WHAT IF ALL THE WORKERS WENT ON STRIKE AND DEMANDED HIGHER WAGES IN EXCHANGE FOR INCREASED PRODUCTION?

BAH... THAT'S EASY! PEUGEOT FIRES THEM AND HIRES NEW WORKERS.

ALL SORTED! IN CHINA! I MEAN REALLY!



BUT LET'S IMAGINE SOMETHING EVEN WORSE. WHAT IF A DISASTER STRUCK ALL YOUR FACTORIES WORLDWIDE, DESTROYING ALL THE MACHINERY AND BUILDINGS...?

LORD ABOVE! YOU HAVE THE STRANGEST IDEAS!



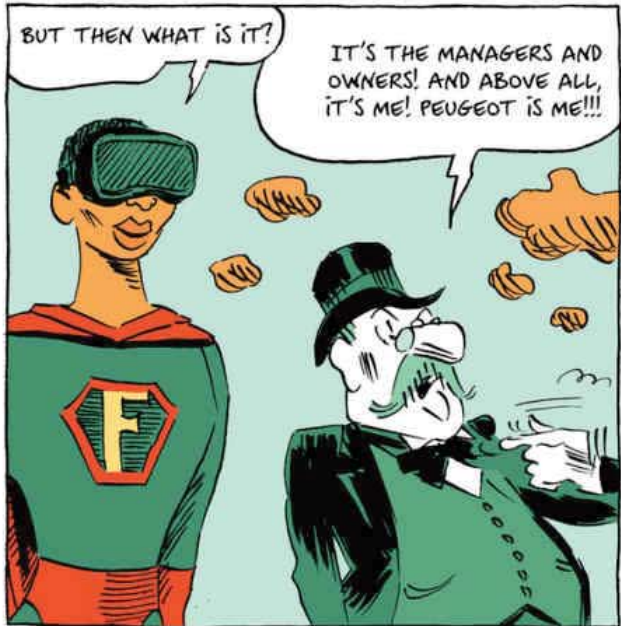
WELL, PEUGEOT WOULD TAKE OUT A LOAN, BUY NEW MACHINERY AND BUILD NEW FACTORIES, MADAM!

IT'S DOCTOR ACTUALLY...

OH! I BEG YOUR PARDON.

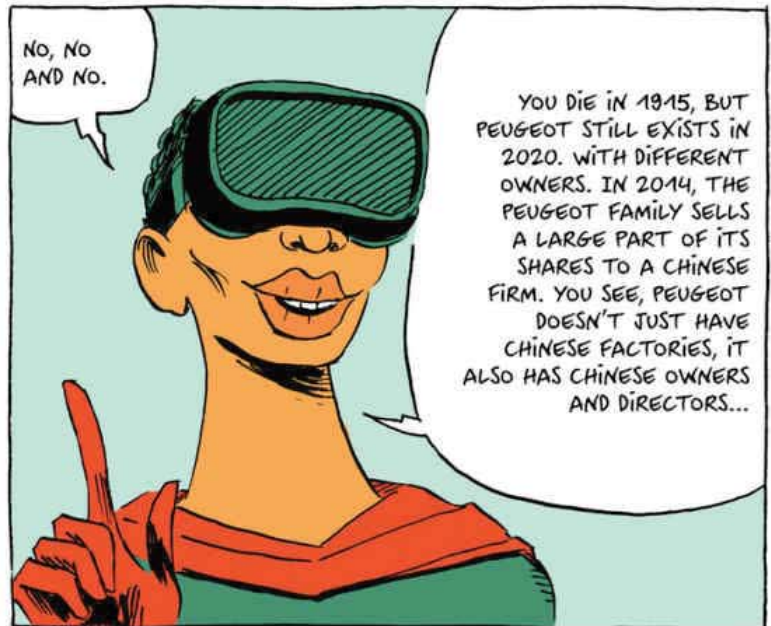


EXACTLY. SO, PEUGEOT ISN'T THE CARS OR THE WORKERS OR THE FACTORIES...



BUT THEN WHAT IS IT?

IT'S THE MANAGERS AND OWNERS! AND ABOVE ALL, IT'S ME! PEUGEOT IS ME!!!



NO, NO AND NO.

YOU DIE IN 1915, BUT PEUGEOT STILL EXISTS IN 2020. WITH DIFFERENT OWNERS. IN 2014, THE PEUGEOT FAMILY SELLS A LARGE PART OF ITS SHARES TO A CHINESE FIRM. YOU SEE, PEUGEOT DOESN'T JUST HAVE CHINESE FACTORIES, IT ALSO HAS CHINESE OWNERS AND DIRECTORS...

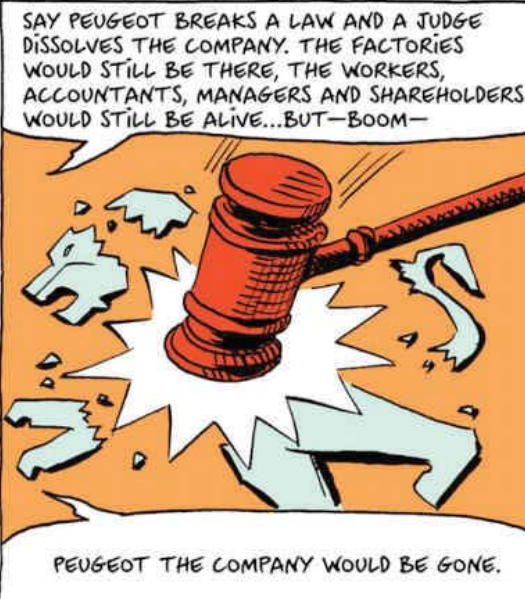
CHINESE OWNERS? WELL, THAT IS A CHANGE! BUT AT LEAST PEUGEOT'S IMMORTAL!



I WOULDN'T GO THAT FAR...

A superhero in a green suit with a red cape and a yellow 'F' on his chest is talking to an older man with a white beard, a top hat, and a monocle. The man is holding a white dog. The background is a simple yellow and orange gradient.

SAY PEUGEOT BREAKS A LAW AND A JUDGE DISSOLVES THE COMPANY. THE FACTORIES WOULD STILL BE THERE, THE WORKERS, ACCOUNTANTS, MANAGERS AND SHAREHOLDERS WOULD STILL BE ALIVE...BUT—BOOM—



PEUGEOT THE COMPANY WOULD BE GONE.

A red gavel is shown striking a white dog, which is being crushed into a jagged shape. The background is orange with white jagged shapes representing the destruction.

UMMM....



A close-up of the older man with a white beard, a top hat, and a monocle. He has a thoughtful expression.

LOOK, I CAN SEE I'VE UPSET YOU. COME ON, ARMAND, I'LL BUY YOU A DRINK IN THE VILLAGE.



The superhero and the older man are walking together on a dirt path in a rural village. The superhero is on the left, and the older man is on the right, leaning on a cane. In the background, there are green hills, a yellow car, and a house.

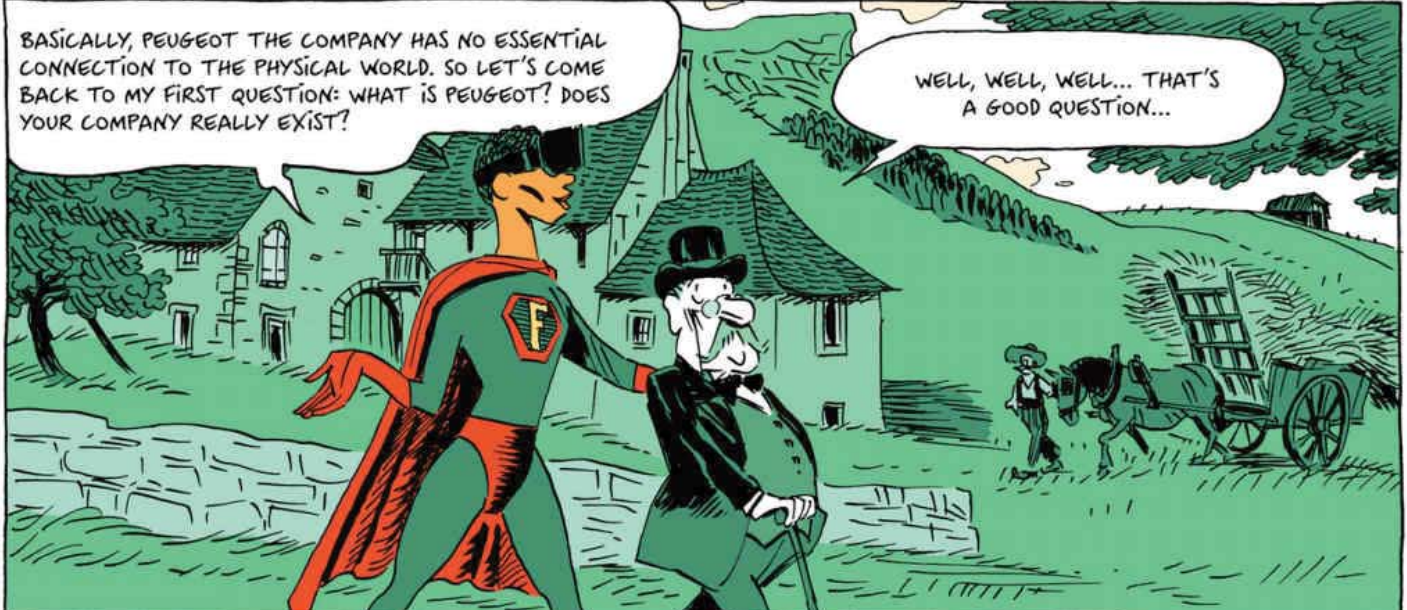
WHAT A STRANGE PERSON....



A close-up of the superhero looking at the older man. The superhero is wearing his green mask and has a yellow 'F' on his chest. The older man is looking back at him.

BASICALLY, PEUGEOT THE COMPANY HAS NO ESSENTIAL CONNECTION TO THE PHYSICAL WORLD. SO LET'S COME BACK TO MY FIRST QUESTION: WHAT IS PEUGEOT? DOES YOUR COMPANY REALLY EXIST?

WELL, WELL, WELL... THAT'S A GOOD QUESTION...



The superhero and the older man are walking through a village. The superhero is on the left, and the older man is on the right, leaning on a cane. In the background, there are stone houses, a horse-drawn cart, and a person walking.

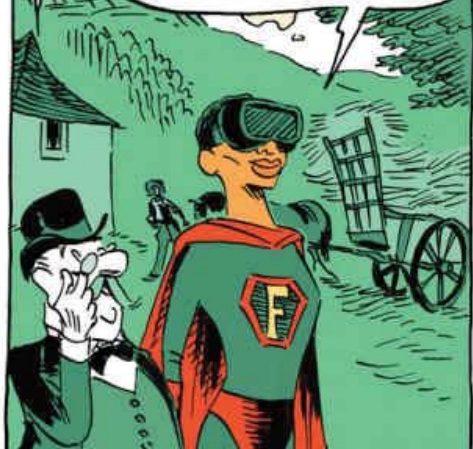
AND I CAN ANSWER IT, ARMAND. PEUGEOT IS A FIGMENT OF OUR COLLECTIVE IMAGINATION. WHAT THOSE LAWYERS GUYS CALL A "LEGAL FICTION." IT CAN'T BE POINTED AT, IT'S NOT A PHYSICAL OBJECT!



YES, BUT IT DOES EXIST AS A LEGAL ENTITY. JUST LIKE YOU AND ME, IT HAS TO OBEY THE LAW, IT CAN OPEN A BANK ACCOUNT, IT CAN OWN PROPERTY...



AND IT PAYS ITS TAXES, DOC!
ABSOLUTELY, AND IT CAN BE SUED, PROSECUTED EVEN, BUT TOTALLY SEPARATELY FROM ANY OF THE PEOPLE WHO OWN OR WORK FOR IT.



PEUGEOT BELONGS TO THE PARTICULAR GENRE OF LEGAL FICTIONS CALLED "LIMITED LIABILITY COMPANIES." THE IDEA BEHIND THESE COMPANIES IS ONE OF HUMANITY'S MOST INGENUOUS INVENTIONS.



HOMO SAPIENS LIVED FOR TENS OF THOUSANDS OF YEARS WITHOUT LIMITED LIABILITY COMPANIES. FOR MOST OF RECORDED HISTORY ONLY FLESH-AND-BLOOD HUMANS COULD OWN PROPERTY!

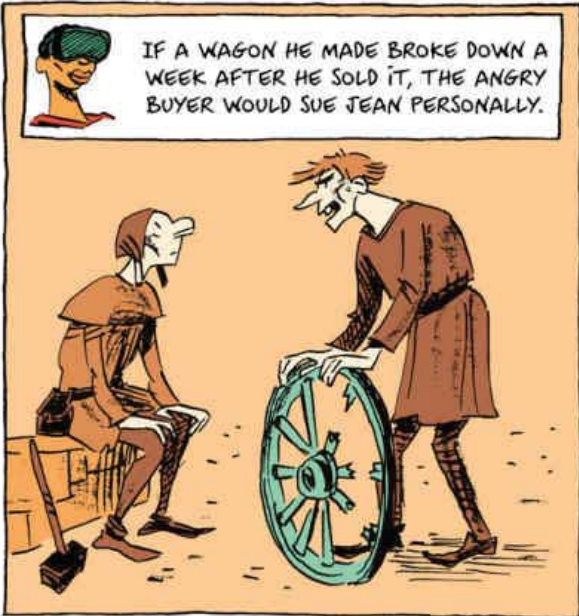


VALENTISNEY, 1213.

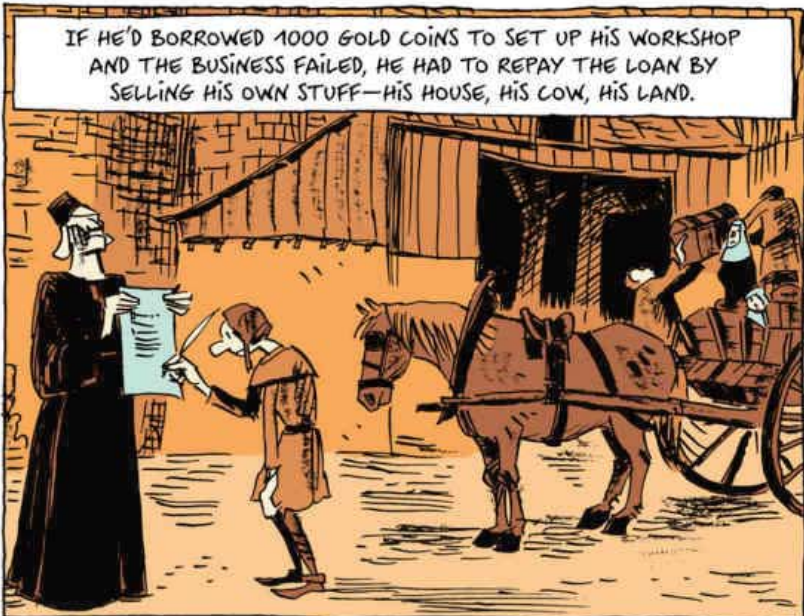


TELL ME ABOUT IT! SEE HOW MUCH HARDER THINGS WERE IN HIS DAY... WHEN HE SET UP HIS LITTLE WAGON-MANUFACTURING WORKSHOP, HE WAS THE BUSINESS.

OOOH.... GRANDPA JEAN...



IF A WAGON HE MADE BROKE DOWN A WEEK AFTER HE SOLD IT, THE ANGRY BUYER WOULD SUE JEAN PERSONALLY.



IF HE'D BORROWED 1000 GOLD COINS TO SET UP HIS WORKSHOP AND THE BUSINESS FAILED, HE HAD TO REPAY THE LOAN BY SELLING HIS OWN STUFF—HIS HOUSE, HIS COW, HIS LAND.

HE MIGHT EVEN HAVE HAD TO SELL HIS CHILDREN! IF HE COULDN'T COVER THE DEBT, HE MIGHT HAVE BEEN THROWN IN PRISON. HE WAS 100% LIABLE FOR ALL HIS WORKSHOP'S OBLIGATIONS.



SO IN YOUR GRANDPA JEAN'S DAY, PEOPLE WERE AFRAID TO START NEW BUSINESSES AND TAKE RISKS LIKE THAT. FAILURE COULD MEAN RUIN FOR THEM AND THEIR WHOLE FAMILY.



IF I'D LIVED IN THOSE DAYS, I WOULD PROBABLY HAVE THOUGHT TWICE ABOUT STARTING UP A BUSINESS...



THE USUAL FOR YOU, MR. ARMAND?

THAT'S WHY PEOPLE INVENTED A REALLY CRAZY STORY—LIMITED LIABILITY COMPANIES! THESE COMPANIES WERE LEGALLY INDEPENDENT OF THE PEOPLE WHO SET THEM UP, OR INVESTED MONEY IN THEM, OR MANAGED THEM.

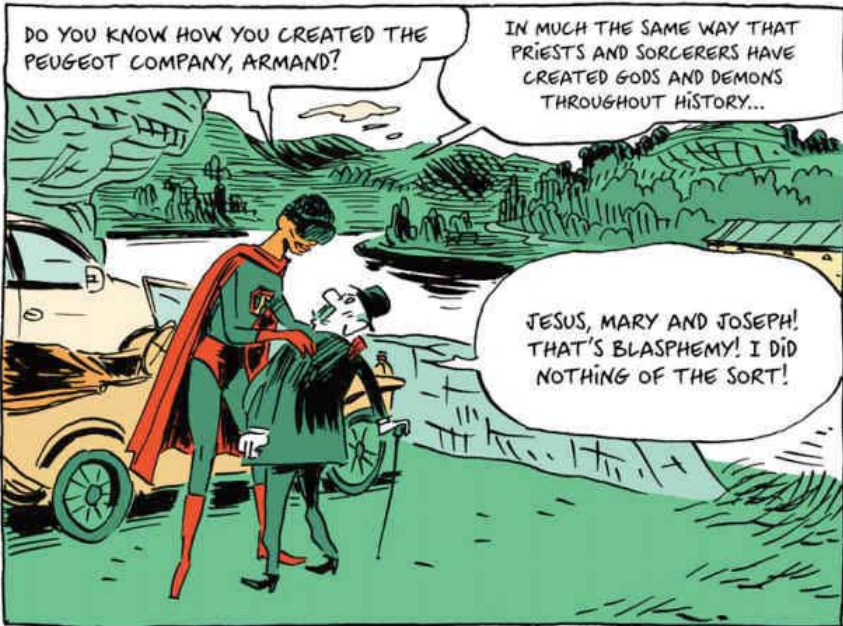
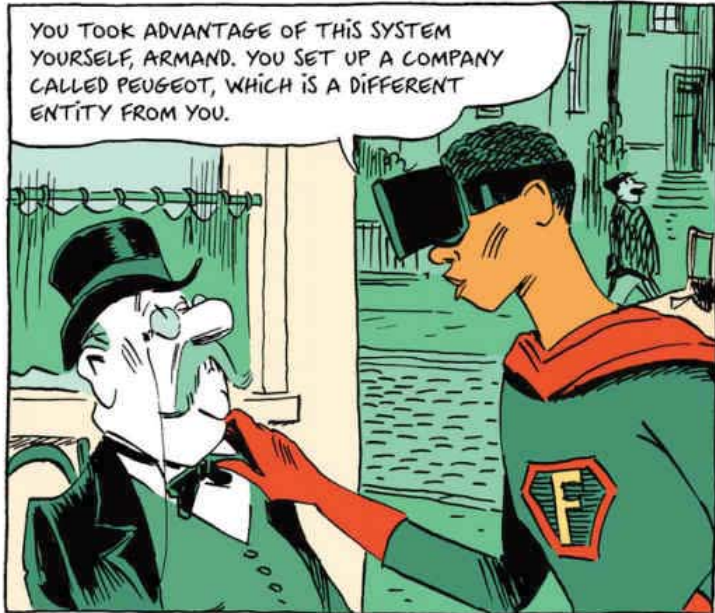
OVER THE LAST FEW CENTURIES THESE COMPANIES HAVE BECOME THE BIG SHOTS IN THE ECONOMIC ARENA, AND WE'RE SO USED TO THEM, WE FORGET THEY ONLY EXIST IN OUR IMAGINATION.



I DON'T UNDERSTAND ALL OF THIS, BUT I'LL BELIEVE YOU....

IN THE UNITED STATES, THESE LIMITED LIABILITY COMPANIES ARE CALLED "CORPORATIONS"—KIND OF IRONIC, BECAUSE THE WORD COMES FROM "CORPUS," THE LATIN WORD FOR "BODY"... AND THAT'S THE ONE THING THEY DON'T HAVE! SO THEY DON'T HAVE REAL BODIES, BUT THE AMERICAN LEGAL SYSTEM TREATS CORPORATIONS AS LEGAL PERSONS, LIKE THEY WERE FLESH-AND-BLOOD HUMAN BEINGS!





ACCORDING TO CATHOLIC BELIEFS, IF A CATHOLIC PRIEST WEARING HIS SACRED GARMENTS SOLEMNLY SAYS THE RIGHT WORDS AT THE RIGHT MOMENT, ORDINARY BREAD AND WINE TURN INTO GOD'S FLESH AND BLOOD.

HOC EST CORPUS MEUM!

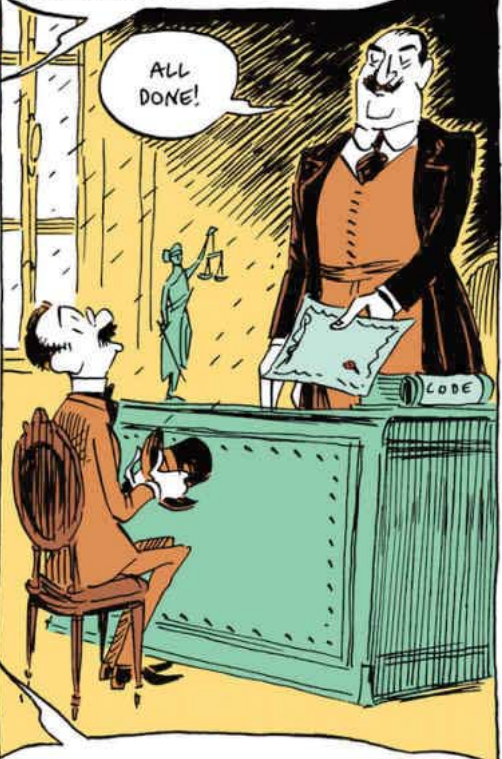


*THIS IS MY BODY!

AND, HOCUS POCUS, THE BREAD BECOMES THE FLESH OF GOD. MILLIONS OF DEVOUT CATHOLICS BEHAVE AS IF GOD REALLY IS THERE IN THAT CONSECRATED PIECE OF BREAD.

ACCORDING TO THE FRENCH LEGAL SYSTEM, IF A CERTIFIED LAWYER FOLLOWS ALL THE RIGHT PROCEDURES, WRITING ALL THE RIGHT SPELLS AND OATHS ON A WONDERFULLY DECORATED PIECE OF PAPER, AND PUTTING HIS ORNATE SIGNATURE AT THE BOTTOM OF THE DOCUMENT, THEN HOCUS POCUS—A NEW COMPANY IS INCORPORATED.

ALL DONE!



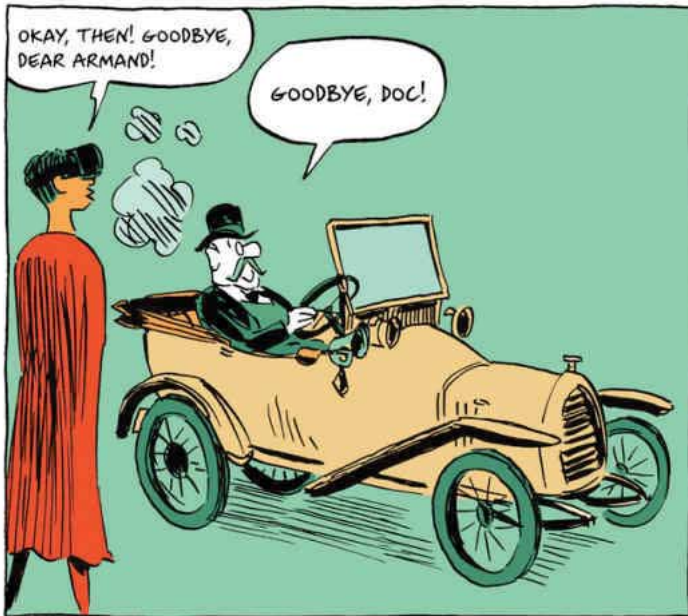
SO, ARMAND, WHEN YOU WANTED TO SET UP YOUR COMPANY IN 1896, YOU PAID A LAWYER TO GO THROUGH ALL THESE SACRED PROCEDURES. ONCE THE LAWYER HAD PERFORMED HIS RITUALS AND PRONOUNCED HIS MAGIC WORDS, MILLIONS OF FRENCH CITIZENS BEHAVED AS IF THE PEUGEOT COMPANY REALLY EXISTED.

WELL, I NEVER... I'VE NEVER THOUGHT OF IT LIKE THAT...



OKAY, THEN! GOODBYE, DEAR ARMAND!

GOODBYE, DOC!



WELL, I NEVER...



TELLING EFFECTIVE
STORIES ISN'T EASY.

THE PROBLEM ISN'T TELLING
STORIES, IT'S CONVINCING EVERYONE
ELSE TO BELIEVE THEM.

MUCH OF HISTORY REVOLVES
AROUND ONE BIG QUESTION...
HOW DO YOU CONVINCe MILLIONS
OF PEOPLE TO BELIEVE A
PARTICULAR STORY ABOUT A
GOD, A NATION OR A LIMITED
LIABILITY COMPANY?

BUT WHEN IT WORKS, IT
GIVES SAPIENS SO MUCH
POWER BECAUSE IT HELPS
MILLIONS OF STRANGERS
TO COOPERATE FOR THE
SAKE OF COMMON GOALS.

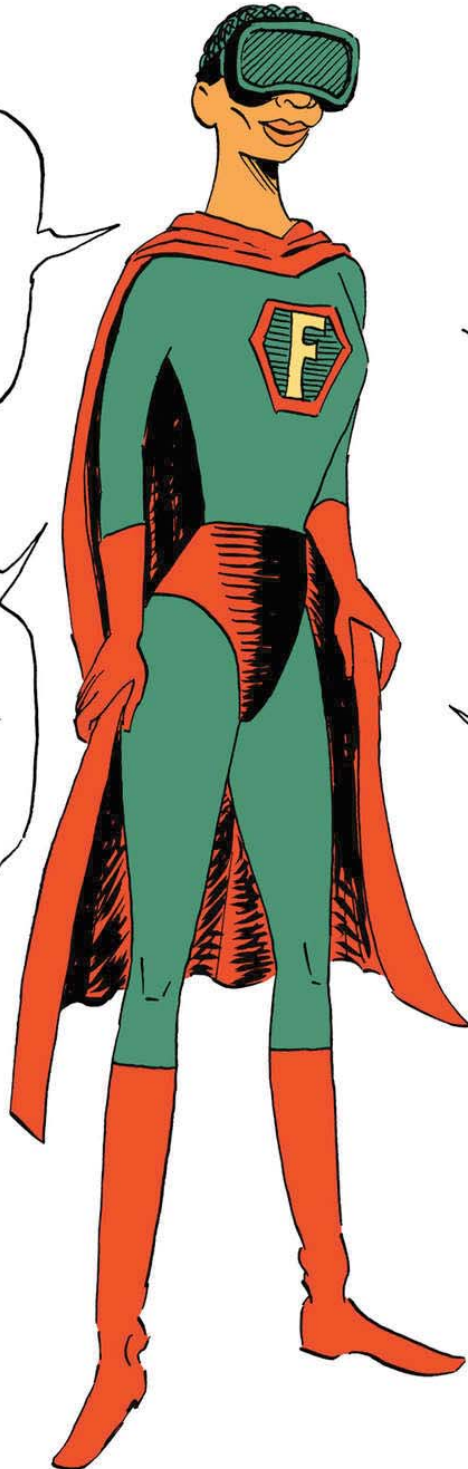
JUST IMAGINE HOW DIFFICULT IT
WOULD HAVE BEEN TO ESTABLISH
STATES, CHURCHES OR LEGAL
SYSTEMS IF WE COULD ONLY
TALK ABOUT REAL THINGS LIKE
RIVERS, TREES AND LIONS.

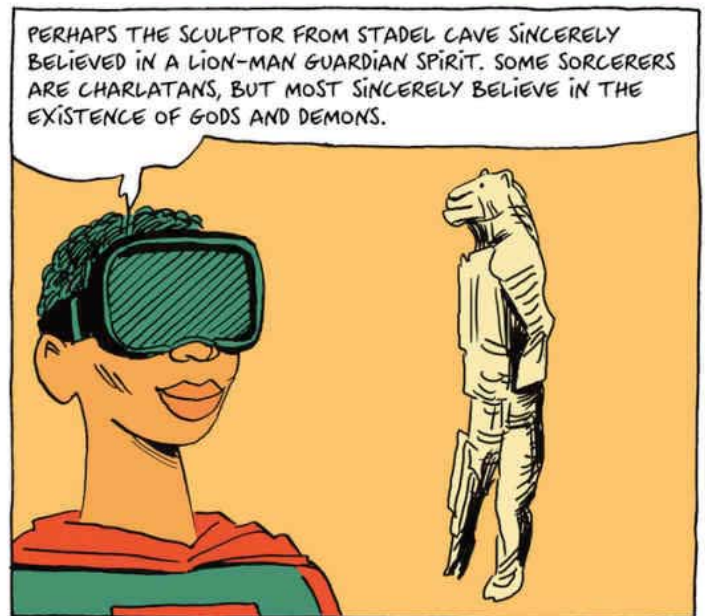
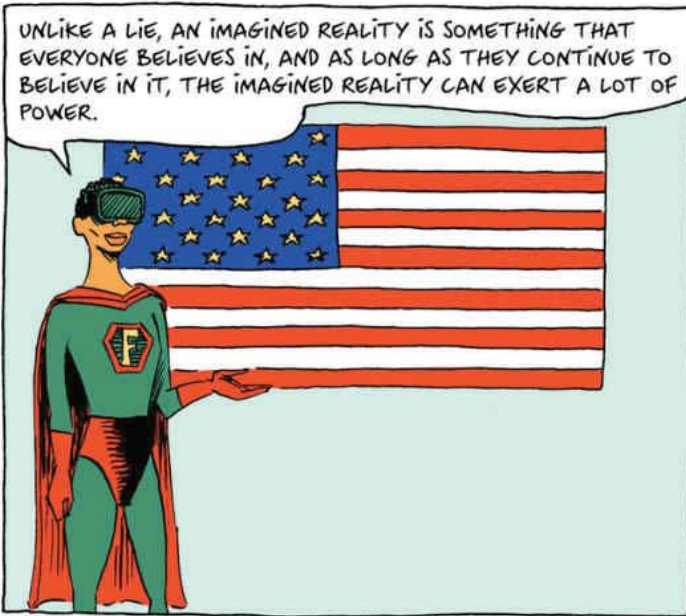
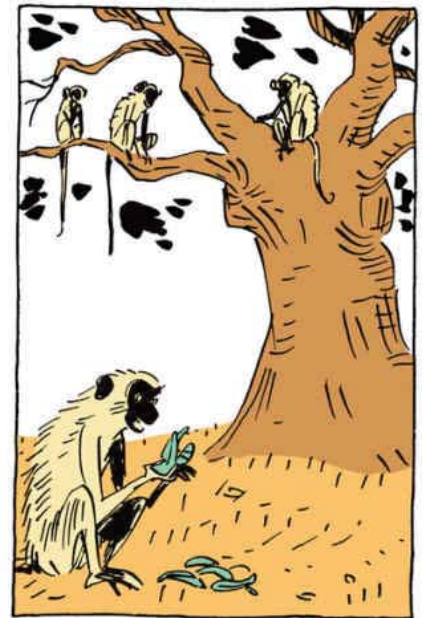
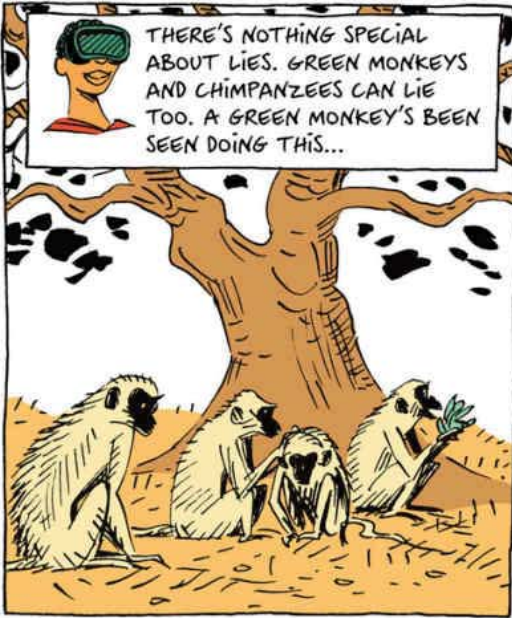
OVER THE YEARS, PEOPLE
HAVE WOVEN AN INCREDIBLY
COMPLEX NETWORK OF STORIES.
WITHIN THIS NETWORK,
FICTIONS SUCH AS PEUGEOT
NOT ONLY EXIST, BUT ALSO
ACCUMULATE SERIOUS POWER.

ACADEMICS HAVE NAMES FOR THE
THINGS CREATED THROUGH THIS
NETWORK OF STORIES. THEY CALL
THEM "FICTIONS," "SOCIAL CONSTRUCTS"
OR "IMAGINED REALITIES."

AN IMAGINED
REALITY ISN'T
A LIE.

I'D BE LYING IF I SAID
THERE WAS A LION NEAR
THE RIVER WHEN I KNEW
FOR SURE THERE WASN'T.

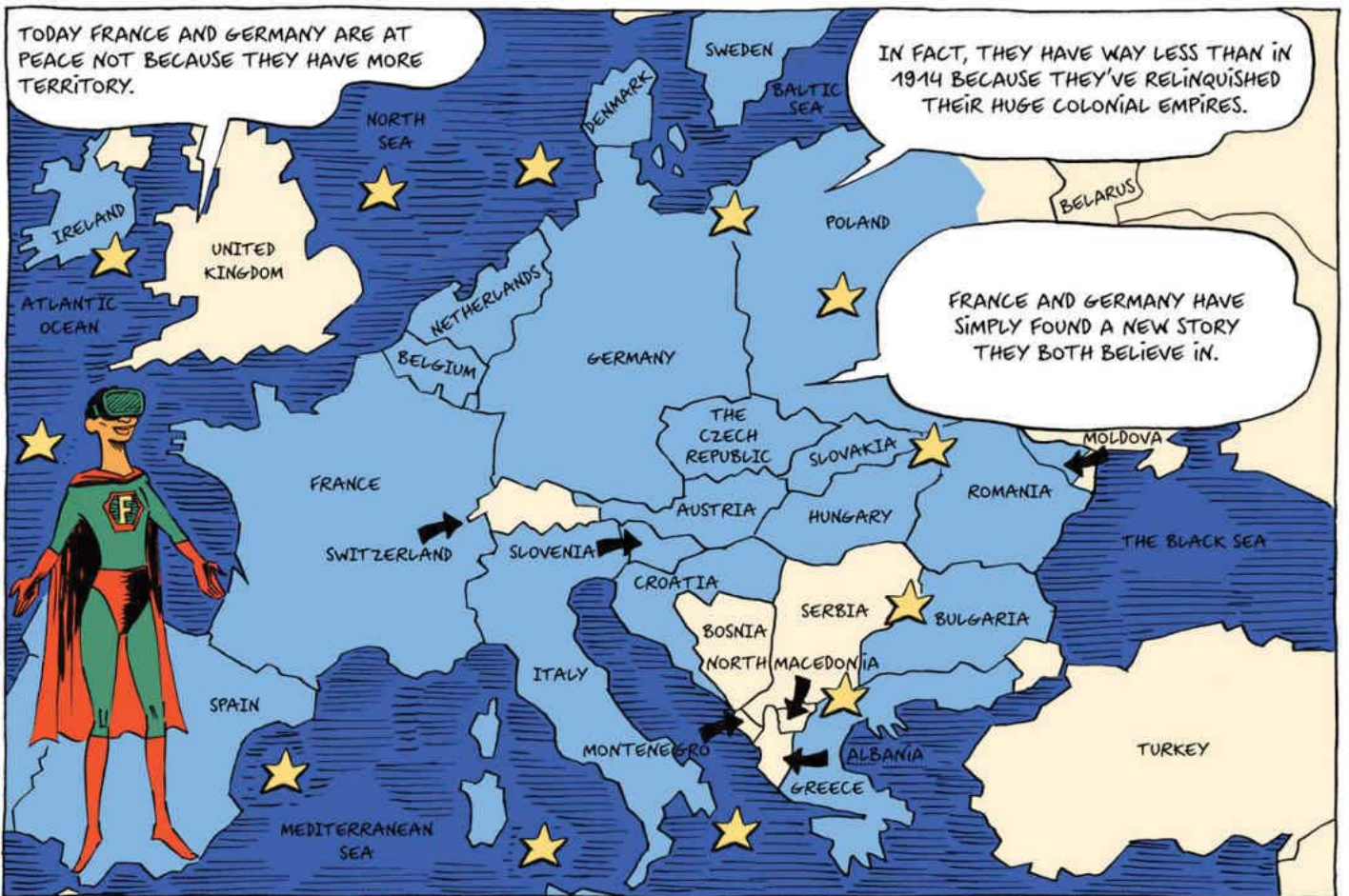
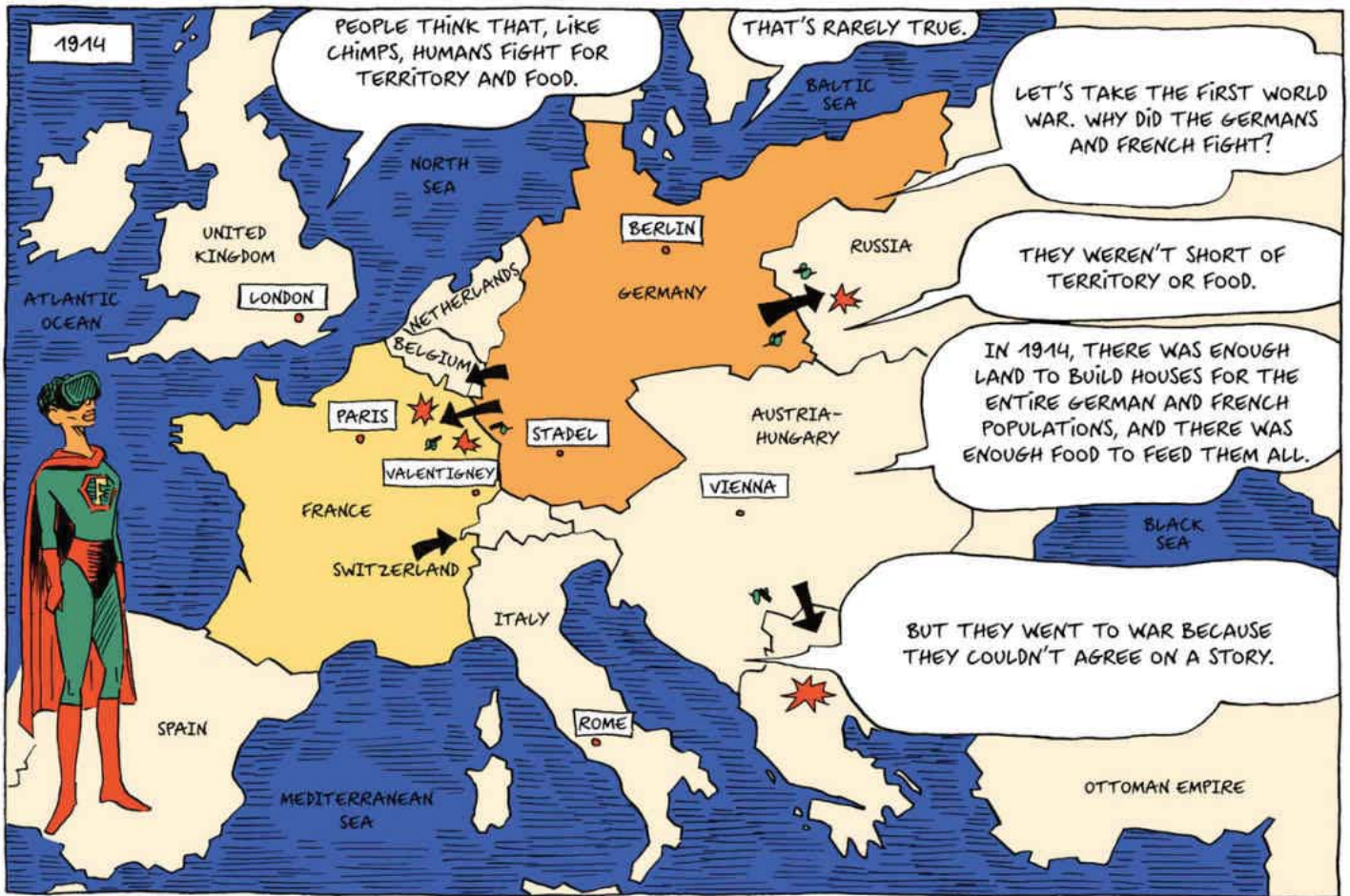


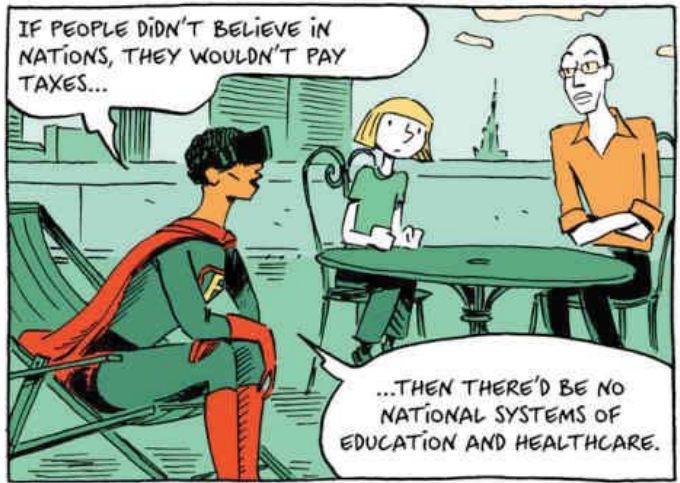


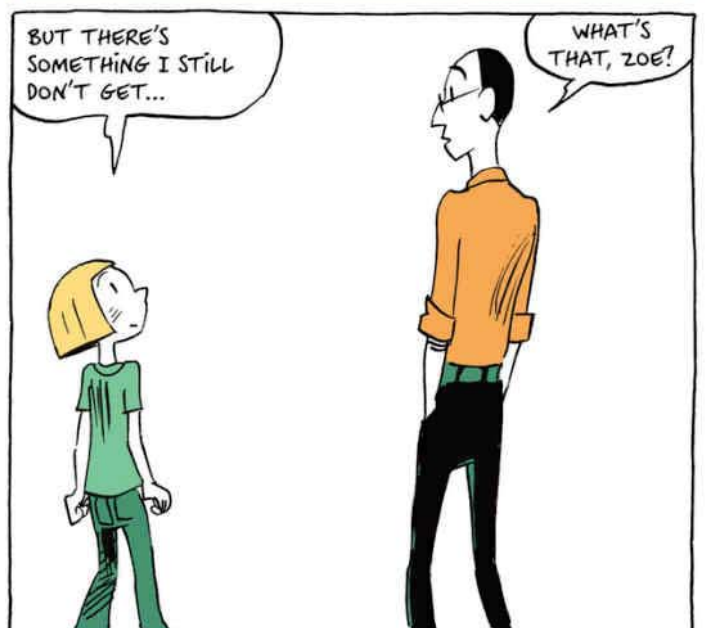
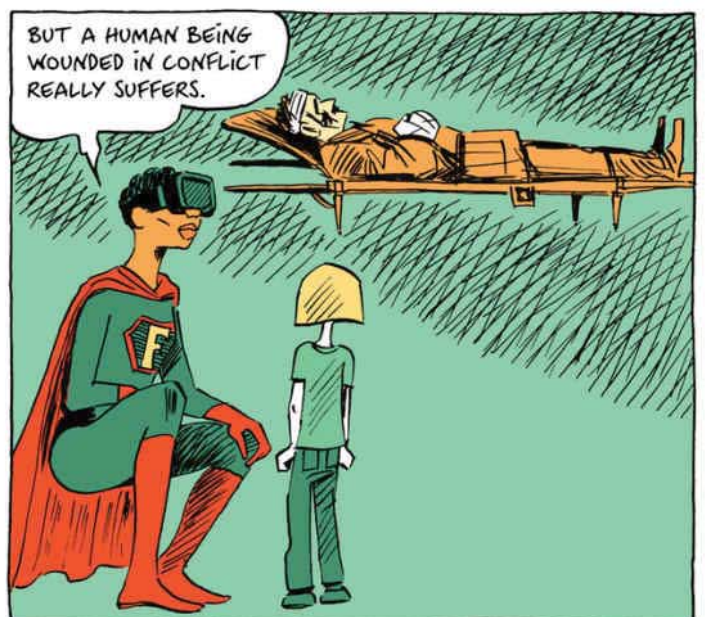
FICTION STORIES

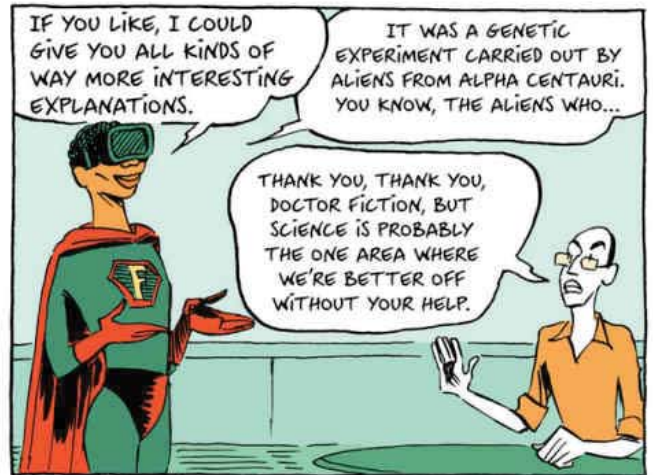
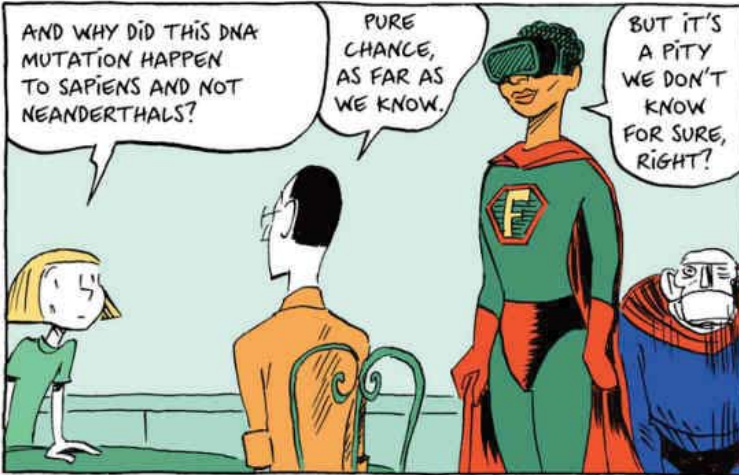
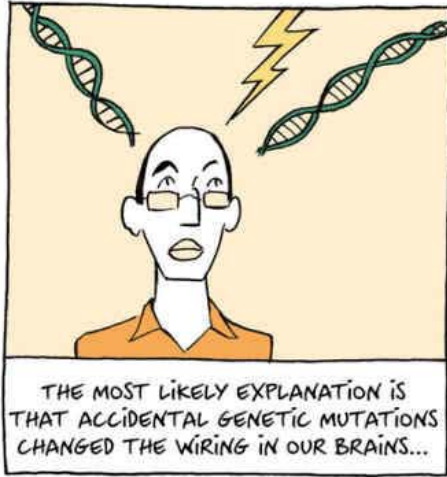


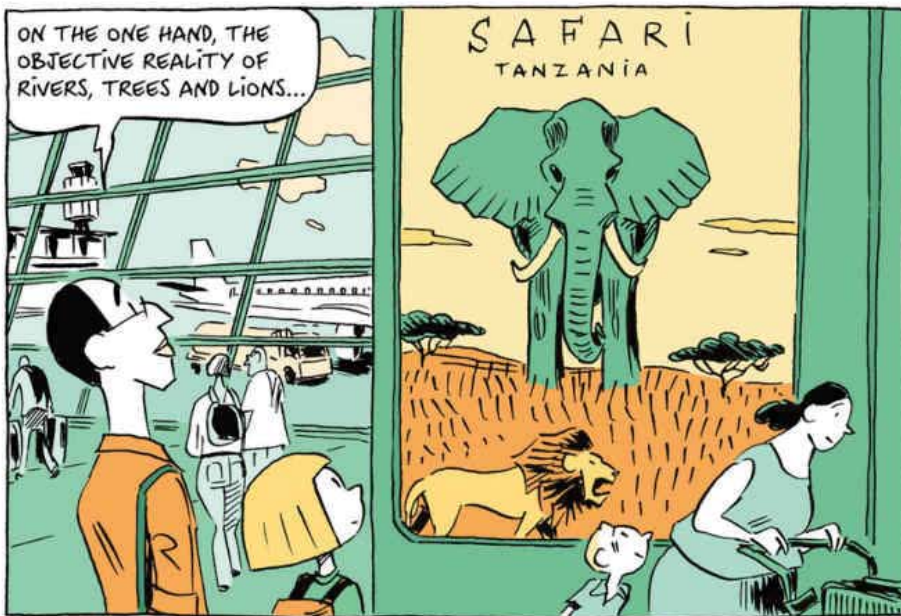
OF COURSE, FICTIONAL STORIES CAN ALSO CAUSE A LOT OF TROUBLE. MOST WARS IN HISTORY WERE FOUGHT OVER FICTIONS.



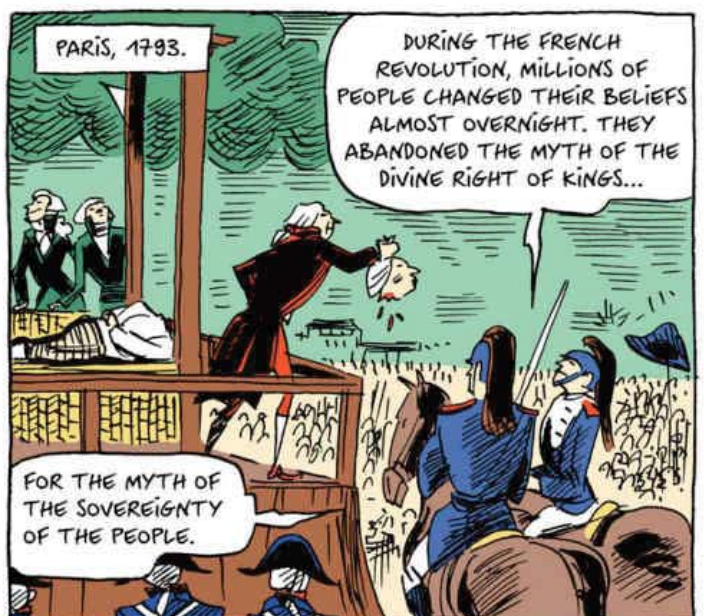
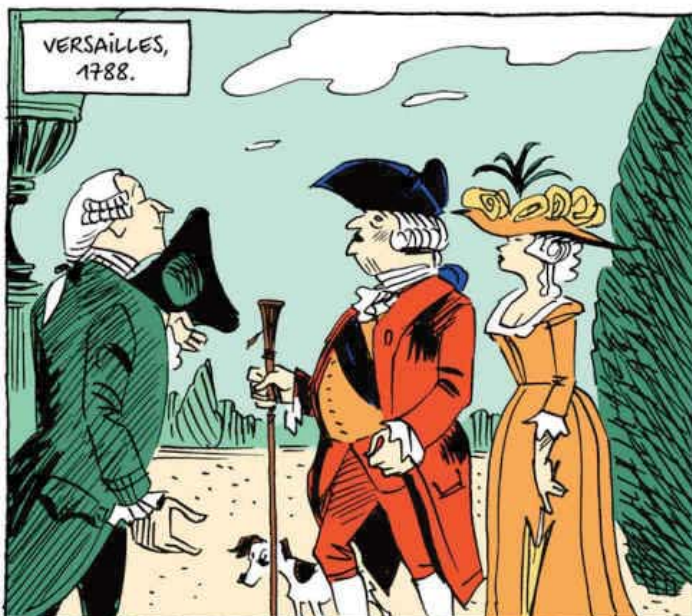


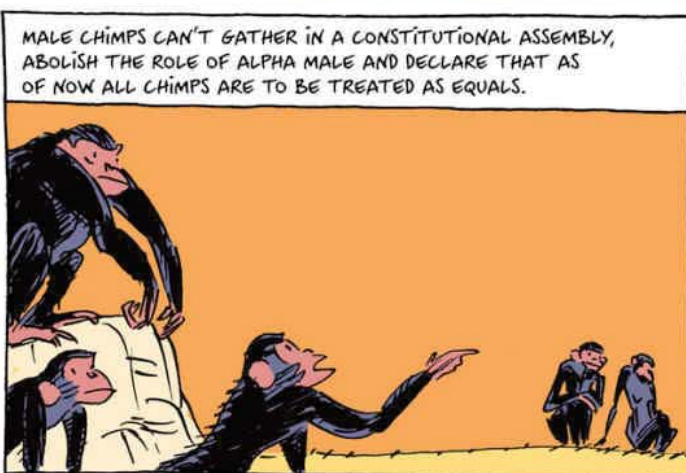
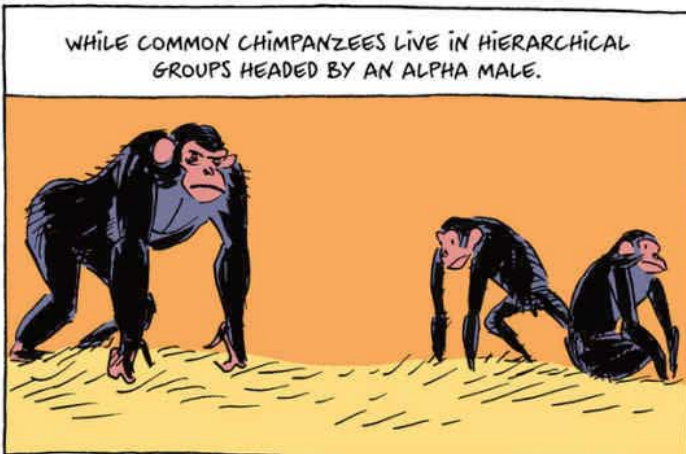
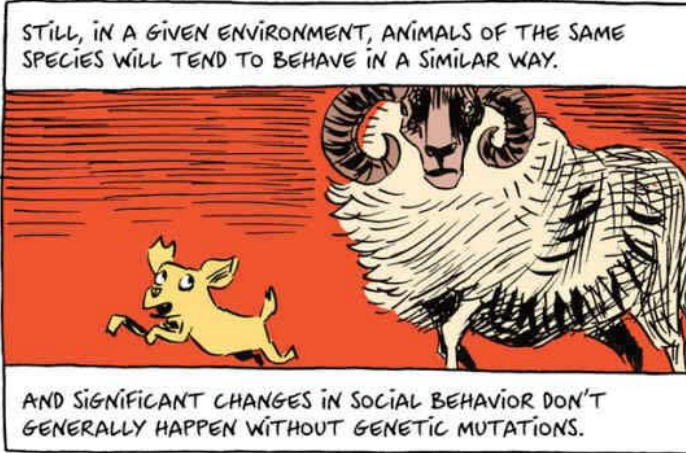
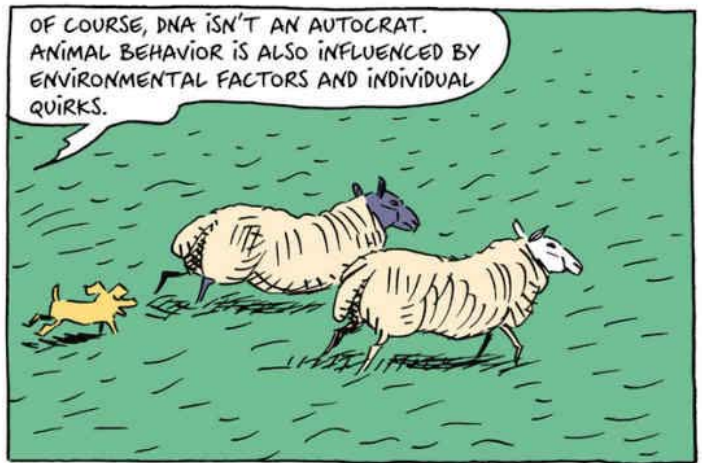












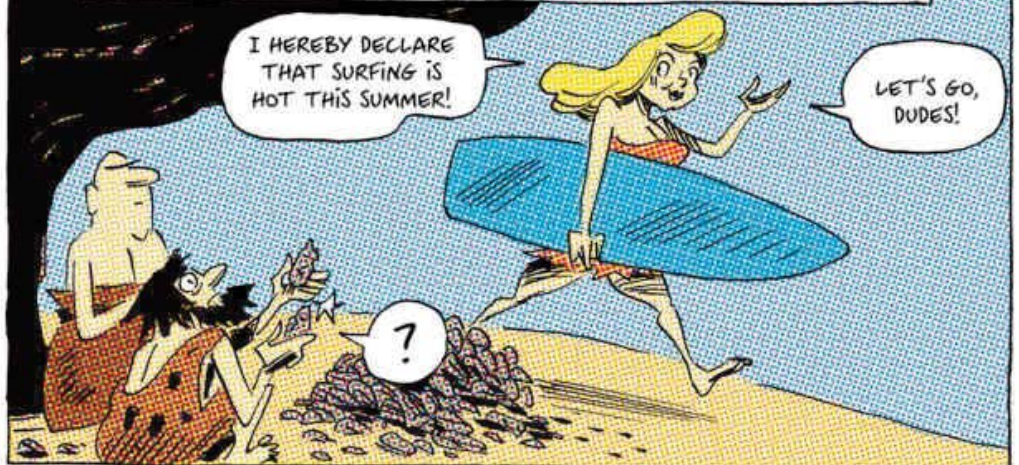
FOR SIMILAR REASONS, ARCHAIC HUMANS DIDN'T INITIATE ANY REVOLUTIONS.



AS FAR AS WE CAN TELL, CHANGES IN SOCIAL PATTERNS, THE INVENTION OF NEW TECHNOLOGIES, AND THE SETTLEMENT OF ALIEN HABITATS RESULTED FROM GENETIC MUTATIONS AND ENVIRONMENTAL PRESSURES MORE THAN FROM CULTURAL INITIATIVES.

I HEREBY DECLARE THAT SURFING IS HOT THIS SUMMER!

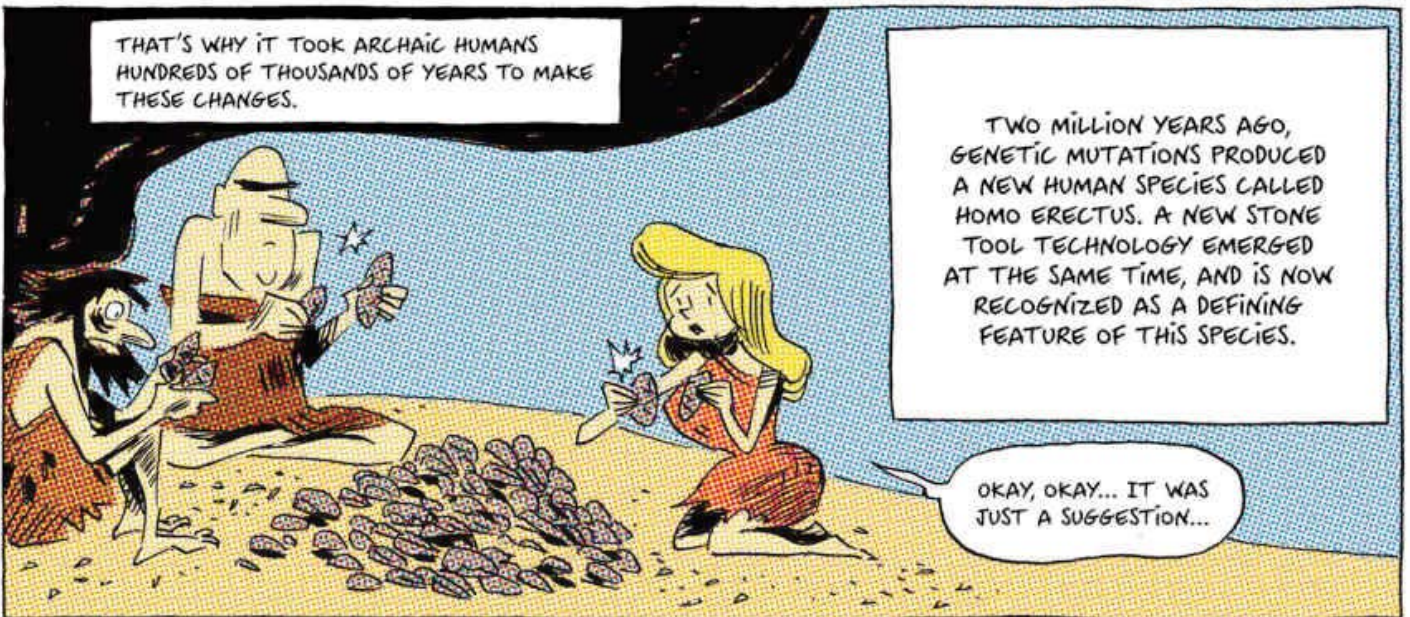
LET'S GO, DUDES!



THAT'S WHY IT TOOK ARCHAIC HUMANS HUNDREDS OF THOUSANDS OF YEARS TO MAKE THESE CHANGES.

TWO MILLION YEARS AGO, GENETIC MUTATIONS PRODUCED A NEW HUMAN SPECIES CALLED HOMO ERECTUS. A NEW STONE TOOL TECHNOLOGY EMERGED AT THE SAME TIME, AND IS NOW RECOGNIZED AS A DEFINING FEATURE OF THIS SPECIES.

OKAY, OKAY... IT WAS JUST A SUGGESTION...

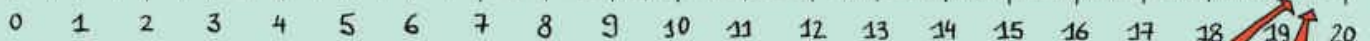


AS LONG AS HOMO ERECTUS DIDN'T UNDERGO FURTHER GENETIC ALTERATIONS, ITS STONE TOOLS REMAINED ROUGHLY THE SAME... FOR CLOSE TO TWO MILLION YEARS!

-2 MILLION YEARS

TODAY

HOMO ERECTUS



IN CONTRAST, EVER SINCE THE COGNITIVE REVOLUTION, SAPIENS HAVE BEEN ABLE TO CHANGE THEIR BEHAVIOR QUICKLY, TRANSMITTING NEW BEHAVIORS TO FUTURE GENERATIONS WITHOUT NEEDING GENETIC OR ENVIRONMENTAL CHANGES.



HERE'S A PRIME EXAMPLE: HUMANS SOMETIMES HAVE CHILDLESS ELITES.



EUNUCH OF THE FORBIDDEN CITY



BUDDHIST NUN



CATHOLIC PRIEST



THE VERY EXISTENCE OF THESE ELITES GOES AGAINST THE MOST FUNDAMENTAL PRINCIPLES OF NATURAL SELECTION, BECAUSE THESE DOMINANT MEMBERS OF SOCIETY WILLINGLY GIVE UP PROCREATION.

WHILE A CHIMPANZEE ALPHA MALE USES HIS POWER TO HAVE SEX WITH AS MANY FEMALES AS POSSIBLE—THEREFORE Siring A LARGE PROPORTION OF HIS TROOP'S YOUNG—THE CATHOLIC ALPHA MALE ABSTAINS COMPLETELY FROM SEXUAL INTERCOURSE OR RAISING A FAMILY.



THIS ABSTINENCE DOESN'T RESULT FROM UNIQUE ENVIRONMENTAL CONDITIONS SUCH AS A SEVERE LACK OF FOOD OR OF POTENTIAL MATES.



NOR IS IT DUE TO SOME QUIRKY GENETIC MUTATION. THE CATHOLIC CHURCH HAS SURVIVED FOR CENTURIES, NOT BY PASSING ON A "CELIBACY GENE" FROM ONE POPE TO THE NEXT...

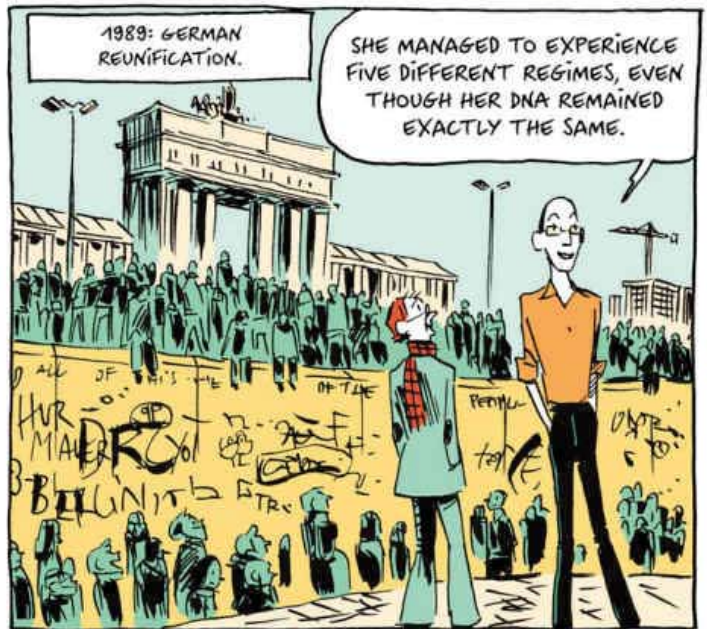
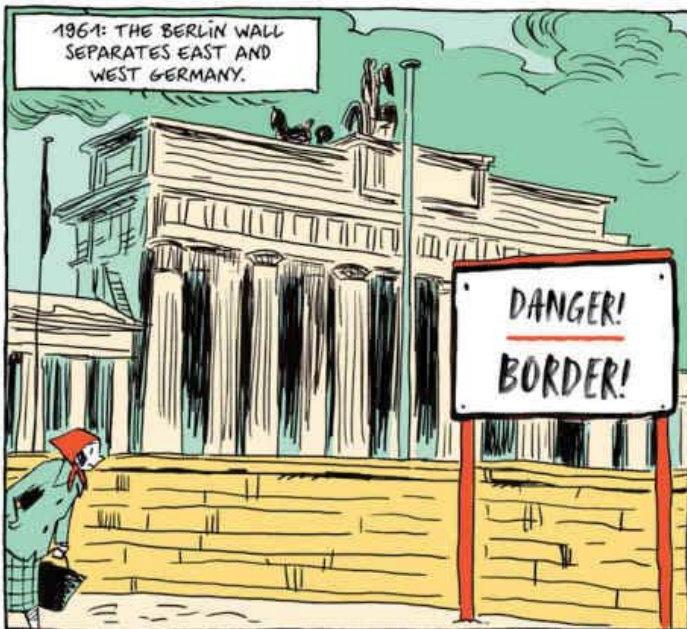
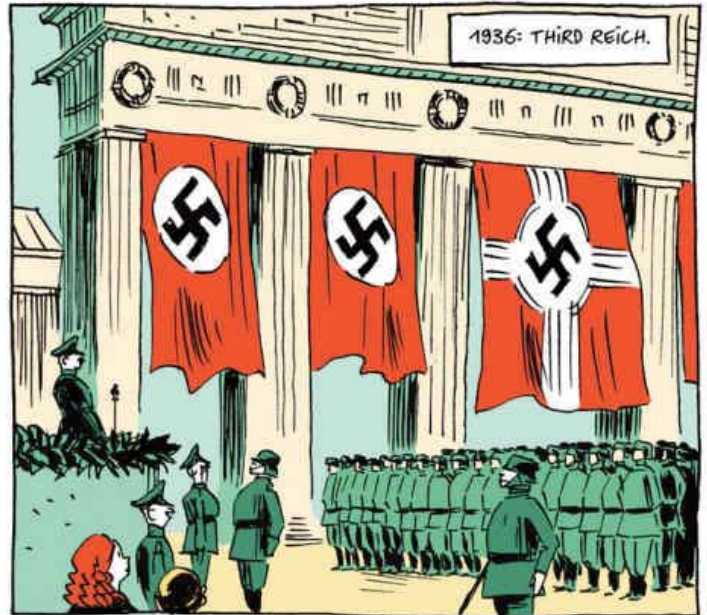


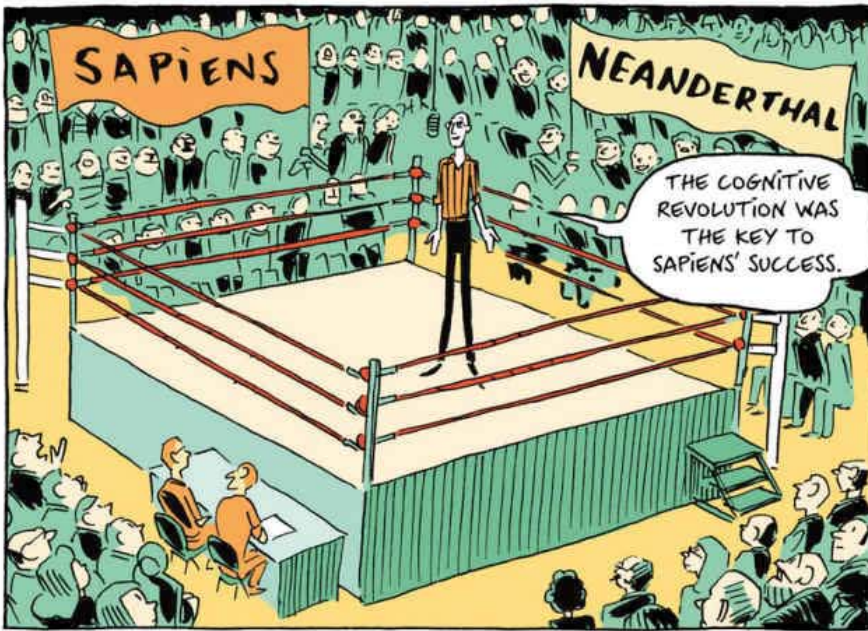
BUT BY PASSING ON THE STORIES OF THE BIBLE AND OF CATHOLIC CANON LAW.



IN OTHER WORDS, WHILE THE BEHAVIOR PATTERNS OF ARCHAIC HUMANS STAYED THE SAME FOR TENS OF THOUSANDS OF YEARS, SAPIENS COULD TRANSFORM THEIR SOCIAL STRUCTURES, THEIR INTERPERSONAL RELATIONS, THEIR ECONOMIC ACTIVITIES AND A HOST OF OTHER BEHAVIORS WITHIN A COUPLE OF DECADES!







BUT IF YOU DON'T TRUST STRANGERS, HOW DO YOU TRADE WITH THEM?

TRADE? WHAT'S TRADE?

IT'S REALLY IMPORTANT.

AND COULD YOUR SAPIENS "TRADE" 30,000 YEARS AGO?

YES. ARCHAEOLOGISTS EXCAVATING 30,000-YEAR-OLD SAPIENS SITES IN CENTRAL EUROPE OCCASIONALLY FIND SEASHELLS THAT WERE BROUGHT HUNDREDS OF MILES FROM THE MEDITERRANEAN AND ATLANTIC COASTS.

WELL, WE MAKE OUR TOOLS WITH LOCAL MATERIALS!

SEASHELLS ARE USELESS, ANYWAY!

AH, BUT THOSE SEASHELLS ARE EVIDENCE THAT DIFFERENT SAPIENS BANDS TRADED WITH ONE ANOTHER.

THERE'S NO EVIDENCE OF TRADE LIKE THIS ON YOUR SITES.

PAH! SEASHELLS ARE FOR KIDS!

OK, SO HERE'S ANOTHER EXAMPLE.

LOOK AT THIS MAP OF THE SOUTH PACIFIC. BANDS OF SAPIENS LIVED ON THE SMALL ISLAND OF NEW IRELAND, ABOUT 30,000 YEARS AGO.

PAPUA-NEW-GUINEA

AUSTRALIA

NEW IRELAND

THESE SAPIENS USED A VOLCANIC GLASS CALLED OBSIDIAN TO MAKE SERIOUSLY STRONG, SHARP TOOLS.

OUCH! THAT IS SHARP!

BUT NEW IRELAND HAS NO NATURAL DEPOSITS OF OBSIDIAN. LAB TESTS SHOWED THAT THE OBSIDIAN THEY USED WAS BROUGHT FROM DEPOSITS 250 MILES AWAY.

NEW IRELAND

NEW BRITAIN

HERE, ON THE ISLAND OF NEW BRITAIN.

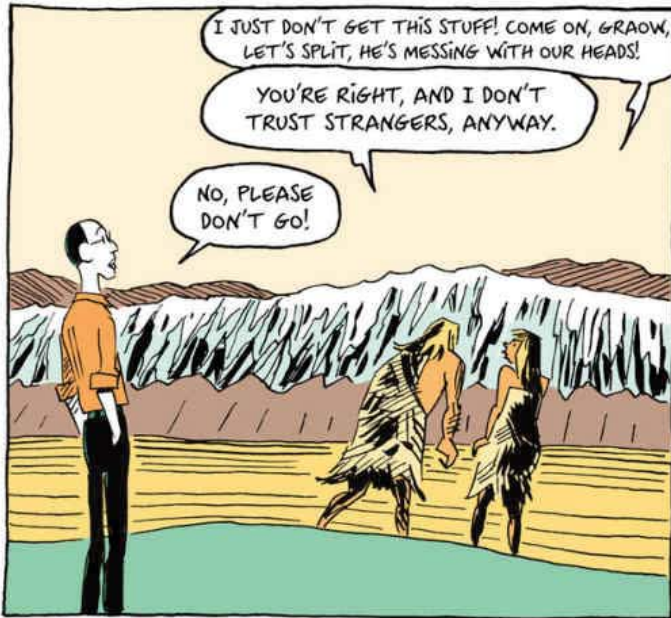
SOME SAPIENS ON THESE ISLANDS MUST HAVE BEEN EXCELLENT SAILORS WHO TRADED FROM ISLAND TO ISLAND OVER LONG DISTANCES.

SAILORS? WHAT'S THE POINT OF THAT?

WELL, TO TRADE, FOR A START.

TRADE, TRADE... IS THAT ALL YOU CAN THINK ABOUT?

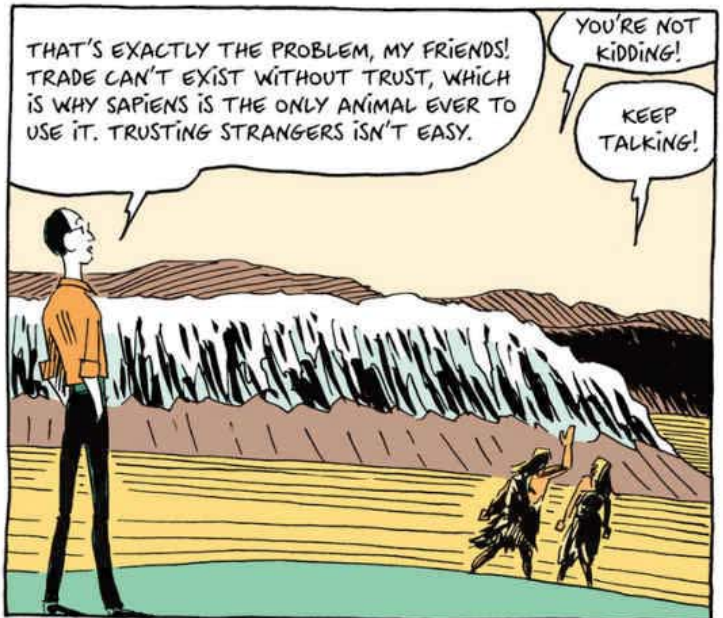
I KNOW TRADE MAY SEEM VERY PRAGMATIC. IT SHOULDN'T NEED FICTIONAL STORIES, BUT ALL TRADE NETWORKS IN HISTORY HAVE BEEN BASED ON FICTIONS.



I JUST DON'T GET THIS STUFF! COME ON, GAAOW, LET'S SPLIT, HE'S MESSING WITH OUR HEADS!

YOU'RE RIGHT, AND I DON'T TRUST STRANGERS, ANYWAY.

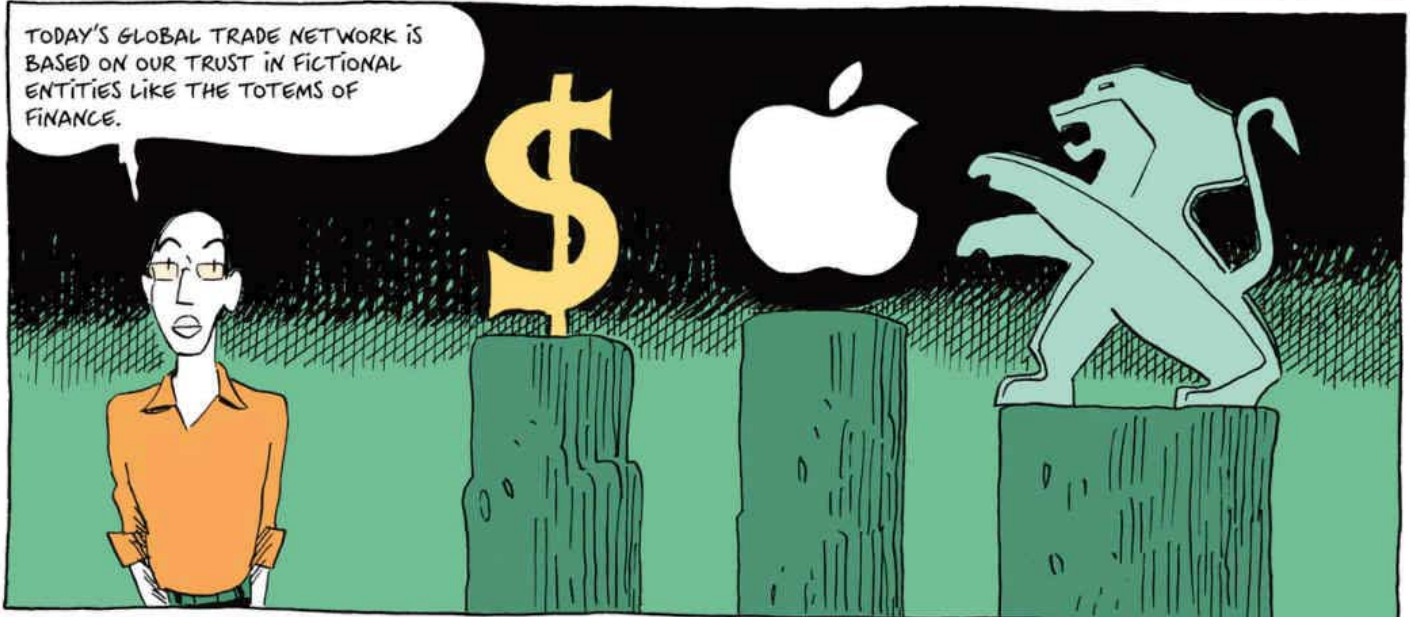
NO, PLEASE DON'T GO!



THAT'S EXACTLY THE PROBLEM, MY FRIENDS! TRADE CAN'T EXIST WITHOUT TRUST, WHICH IS WHY SAPIENS IS THE ONLY ANIMAL EVER TO USE IT. TRUSTING STRANGERS ISN'T EASY.

YOU'RE NOT KIDDING!

KEEP TALKING!



TODAY'S GLOBAL TRADE NETWORK IS BASED ON OUR TRUST IN FICTIONAL ENTITIES LIKE THE TOTEMS OF FINANCE.



WHEN TWO STRANGERS IN A TRIBAL SOCIETY WANT TO TRADE, THEY ESTABLISH TRUST BY APPEALING TO A COMMON GOD, A MYTHICAL ANCESTOR OR A TOTEM ANIMAL.



IT'S EXACTLY THE SAME TODAY. TRADE BETWEEN STRANGERS IN THE TWENTY-FIRST CENTURY ALSO DEPENDS ON APPEALING TO COMMON GODS, ANCESTORS AND TOTEMS.



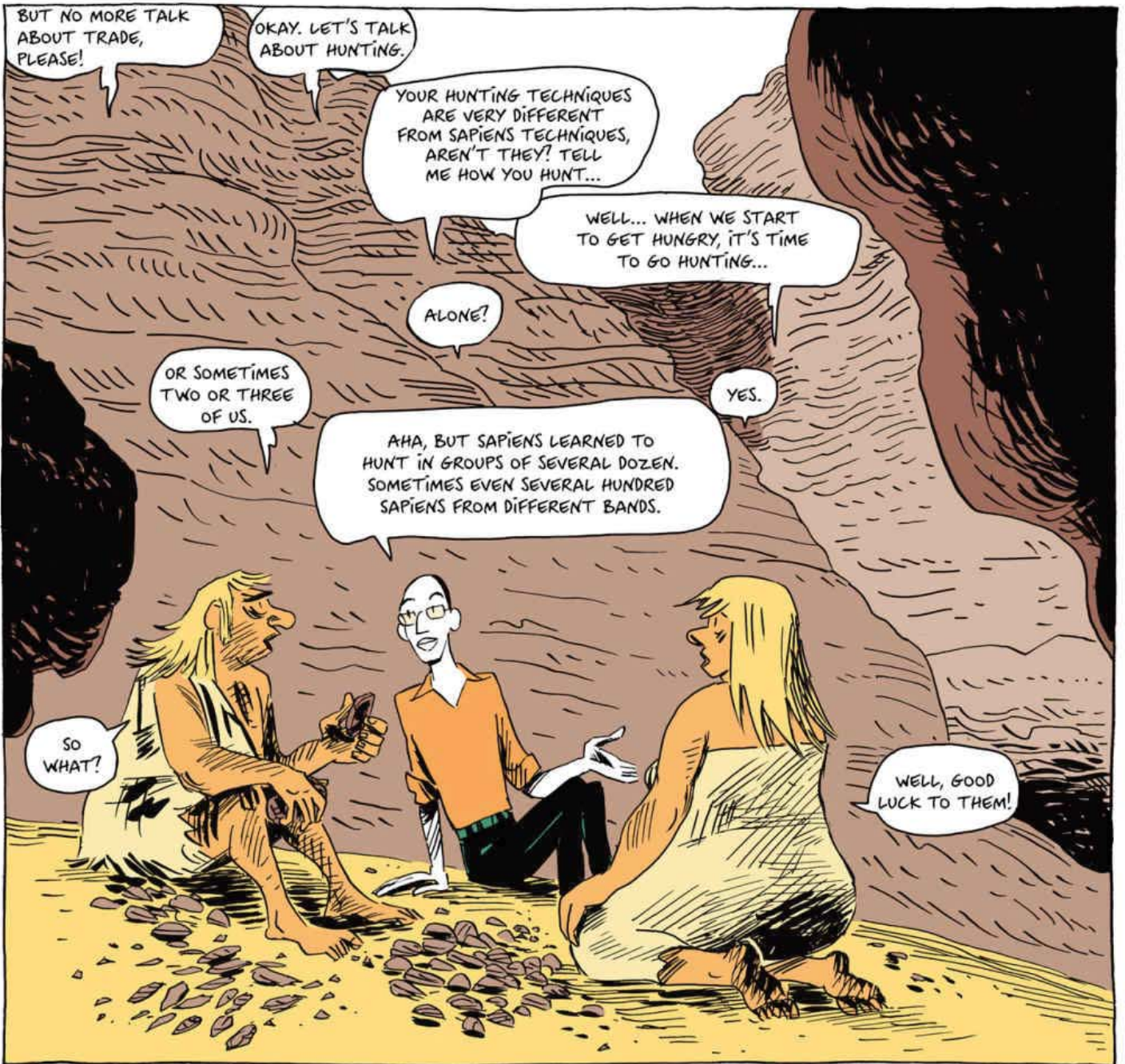
OK! WHERE DID OUR NEANDERTHAL FRIENDS GO?



HEY! ARE YOU GUYS STILL SULKING?

OF COURSE NOT!

NEANDERTHALS, SULK?....



BUT NO MORE TALK ABOUT TRADE, PLEASE!

OKAY. LET'S TALK ABOUT HUNTING.

YOUR HUNTING TECHNIQUES ARE VERY DIFFERENT FROM SAPIENS TECHNIQUES, AREN'T THEY? TELL ME HOW YOU HUNT...

WELL... WHEN WE START TO GET HUNGRY, IT'S TIME TO GO HUNTING...

ALONE!

OR SOMETIMES TWO OR THREE OF US.

YES.

AHA, BUT SAPIENS LEARNED TO HUNT IN GROUPS OF SEVERAL DOZEN. SOMETIMES EVEN SEVERAL HUNDRED SAPIENS FROM DIFFERENT BANDS.

SO WHAT?

WELL, GOOD LUCK TO THEM!

IN LARGER NUMBERS, THEY COULD SURROUND AN ENTIRE HERD OF ANIMALS.

A group of hunters, depicted as simple brown stick figures with spears, are shown surrounding a herd of spotted animals, possibly horses or deer. The scene is set against a plain background.

THEY WORKED TOGETHER, TRAPPING THE HERD BY A RIVER OR IN A NARROW GORGE.

The hunters are shown trapping a herd of animals in a narrow gorge. The animals are being driven towards a river or a narrow passage. The hunters are working together to surround the herd.

THEY COULD KILL AN ENTIRE HERD IN ONE AFTERNOON.

The hunters are shown killing a herd of animals. One animal is lying on the ground, and the hunters are surrounding it. The scene is set against a plain background.

YEAH, AND DON'T WE KNOW IT! THEY WERE SO PUSHY THEY EVEN DID IT ON OUR TERRITORY!

SO THEN WE DIDN'T HAVE ENOUGH TO EAT!

Two characters, a man with glasses and a woman with blonde hair, are shown in profile, talking. The man is on the left, and the woman is on the right.

SAPIENS SOMETIMES EVEN BUILT FENCES AND DUG HOLES TO TRAP ANIMALS.

The hunters are shown building a fence and digging a hole. One hunter is standing on the fence, and another is digging a hole in the ground. The scene is set against a plain background.

UGH... THAT'S A LOT OF WORK! NO BAND COULD DO THAT ON ITS OWN...

SO WHY NOT ASK NEIGHBORING BANDS TO JOIN YOU?

Two characters, a man with glasses and a woman with blonde hair, are shown in profile, talking. The man is on the left, and the woman is on the right.

NEIGHBORING BANDS! BUT THEY'RE STRANGERS! WE CAN'T TRUST THEM—AND THEY DON'T TRUST US.

WELL, YOU COULD TELL THEM YOU HAD A VISION OF THE GREAT LION-SPIRIT IN THE SKY ORDERING ALL NEANDERTHALS TO JOIN FORCES AGAINST THE SAPIENS.

A man with glasses is shown speaking to a group of people. He is wearing a dark coat and has a serious expression. The people are shown in profile, listening to him.

A GREAT LION SPIRIT! IN THE SKY! WHATEVER!

ANYWAY, A LION CAN'T FLY. IT WOULD FALL DOWN!

DID YOU EVER HEAR ANYTHING SO DUMB?

NOT REALLY!

A group of people are shown laughing. They are sitting on the ground and looking at each other. The scene is set against a plain background.

HA! HA!

HA! HA!

BUT, WHAT SHOULD WE DO ABOUT THESE SAPIENS?

A group of people are shown talking. They are sitting on the ground and looking at each other. The scene is set against a plain background.

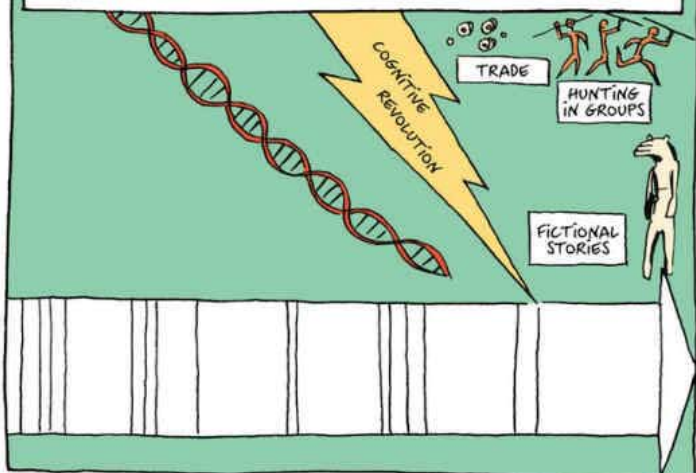
UNTIL THE COGNITIVE REVOLUTION, SAPIENS WERE JUST ANOTHER SPECIES OF ANIMAL. THEY BELONGED TO THE REALM OF BIOLOGY, AND WE USE BIOLOGICAL THEORIES TO UNDERSTAND THEM.



AFTER THE COGNITIVE REVOLUTION, SAPIENS INVENTED LOTS OF FICTIONAL STORIES... AND STARTED LOTS OF STRANGE NEW BEHAVIOR PATTERNS, ESTABLISHING WHAT WE CALL "CULTURES."



HISTORY BEGINS WITH THE COGNITIVE REVOLUTION. OUR PRIMARY MEANS OF EXPLAINING THE DEVELOPMENT OF HOMO SAPIENS FROM THEN ON ARE HISTORICAL NARRATIVES RATHER THAN BIOLOGICAL THEORIES.



THIS DOESN'T MEAN HOMO SAPIENS AND HUMAN CULTURE WERE SUDDENLY EXEMPT FROM BIOLOGICAL LAWS. WE'RE STILL ANIMALS, AND OUR PHYSICAL, EMOTIONAL AND COGNITIVE ABILITIES ARE STILL SHAPED BY OUR DNA.



BUT TO UNDERSTAND THE RISE OF CHRISTIANITY OR THE FRENCH REVOLUTION, IT'S NOT ENOUGH TO KNOW HOW GENES, HORMONES AND ORGANISMS INTERACT. YOU HAVE TO TAKE INTO ACCOUNT HOW IDEAS, IMAGES AND FANTASIES INTERACT AS WELL.

COMING SOON IN SAPIENS!

HOW DID OUR STONE-AGE ANCESTORS LIVE?

COME AND HAVE A PEEP BEHIND THE CURTAIN OF CENTURIES

WHO WERE THE PEOPLE WHO CARVED THE STADEL LION-MAN?
30,000 YEARS AGO!
THEY HAD THE SAME PHYSICAL, EMOTIONAL AND INTELLECTUAL FACULTIES AS WE DO!

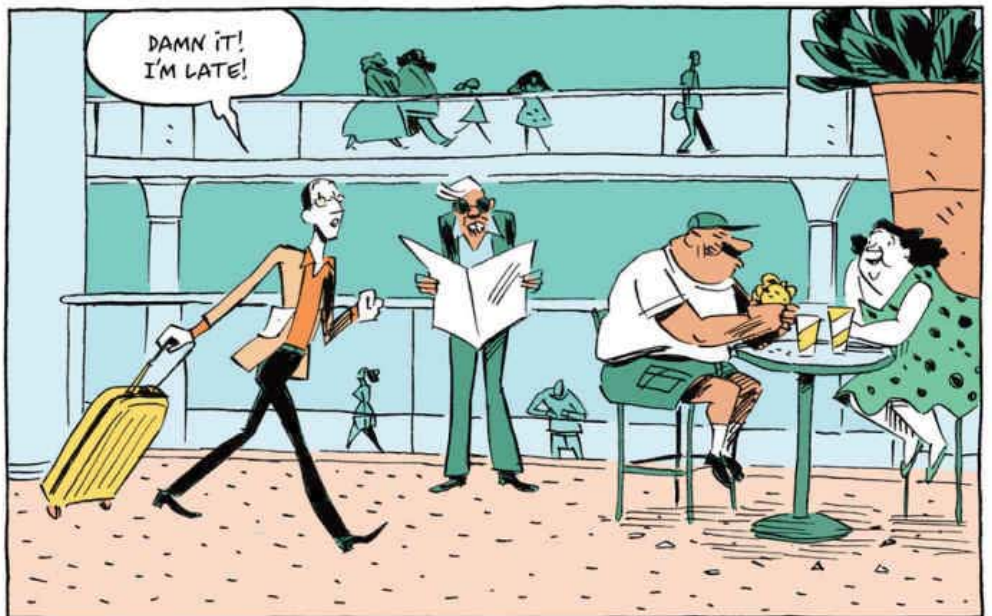
WHAT DID THEY DO WHEN THEY WOKE UP IN THE MORNING?
TEA OR COFFEE!
WHAT DID THEY EAT FOR BREAKFAST AND LUNCH? WHAT WAS THEIR SOCIAL STRUCTURE LIKE?

WHAT WAS SEX LIKE IN THE STONE AGE?

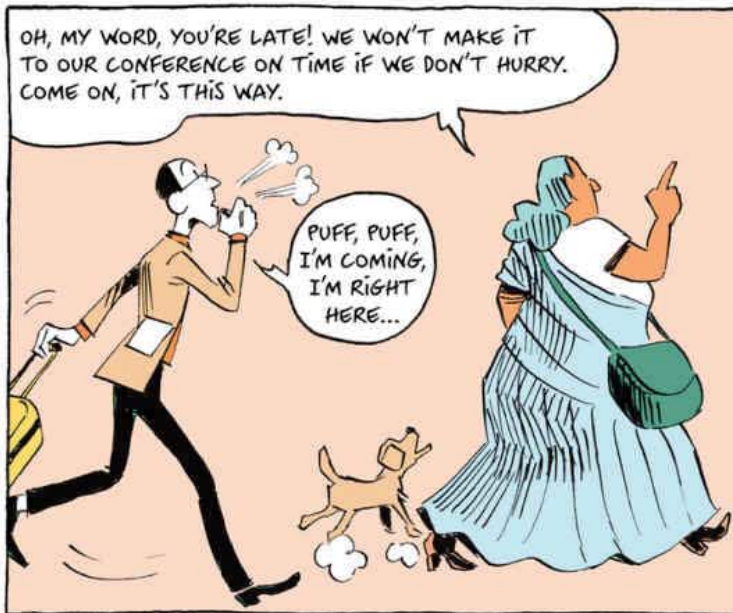
DID THEY HAVE CEREMONIES, MORAL CODES, SPORTS COMPETITIONS AND RELIGIOUS RITUALS?
DID THEY FIGHT WARS?

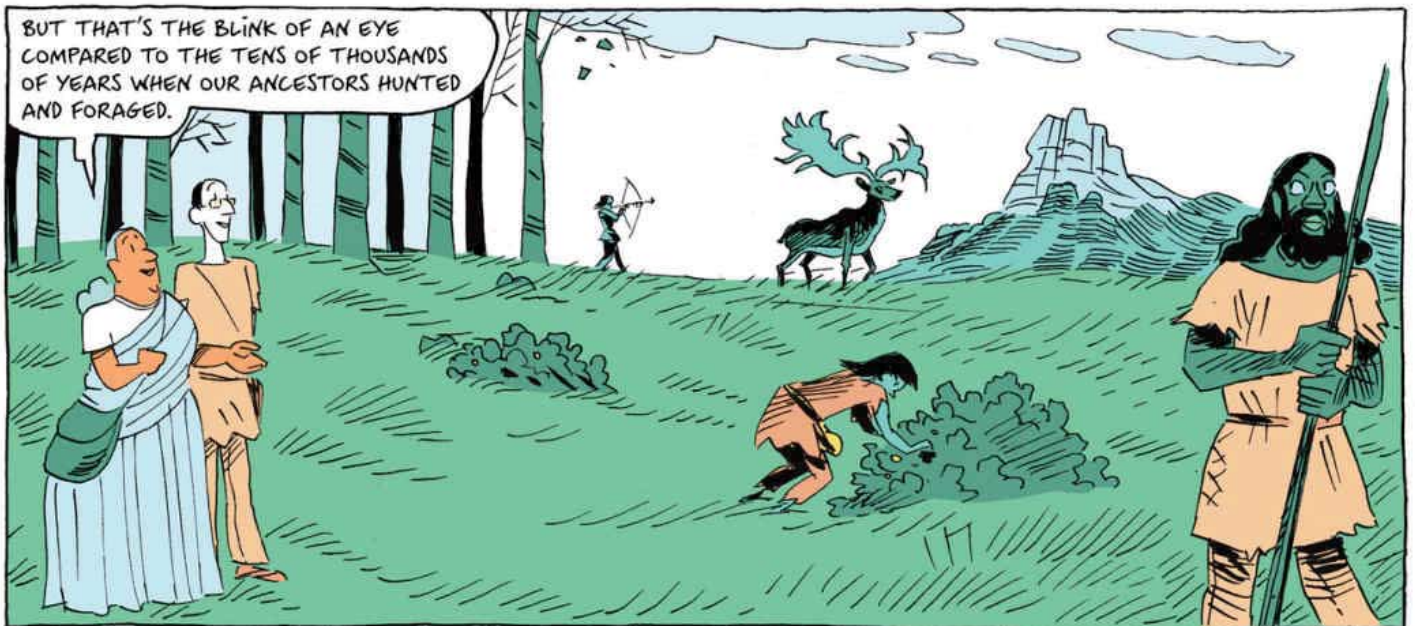
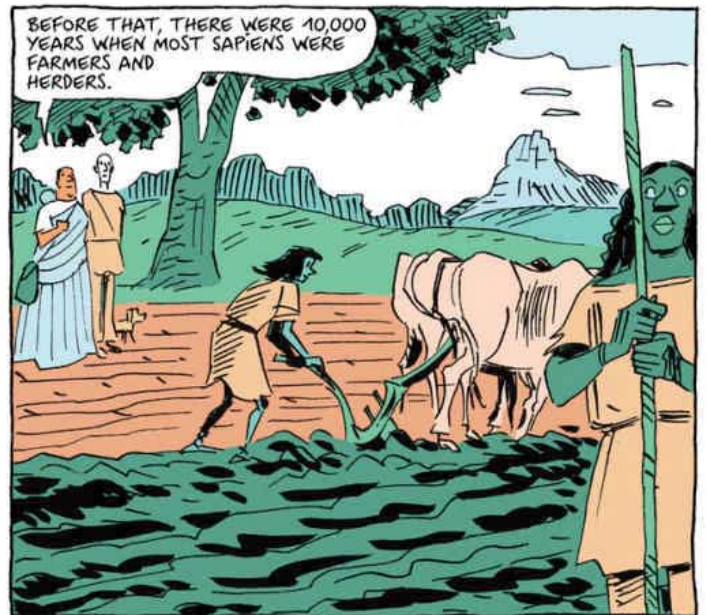


SEX, LIES AND
CAVE PAINTERS

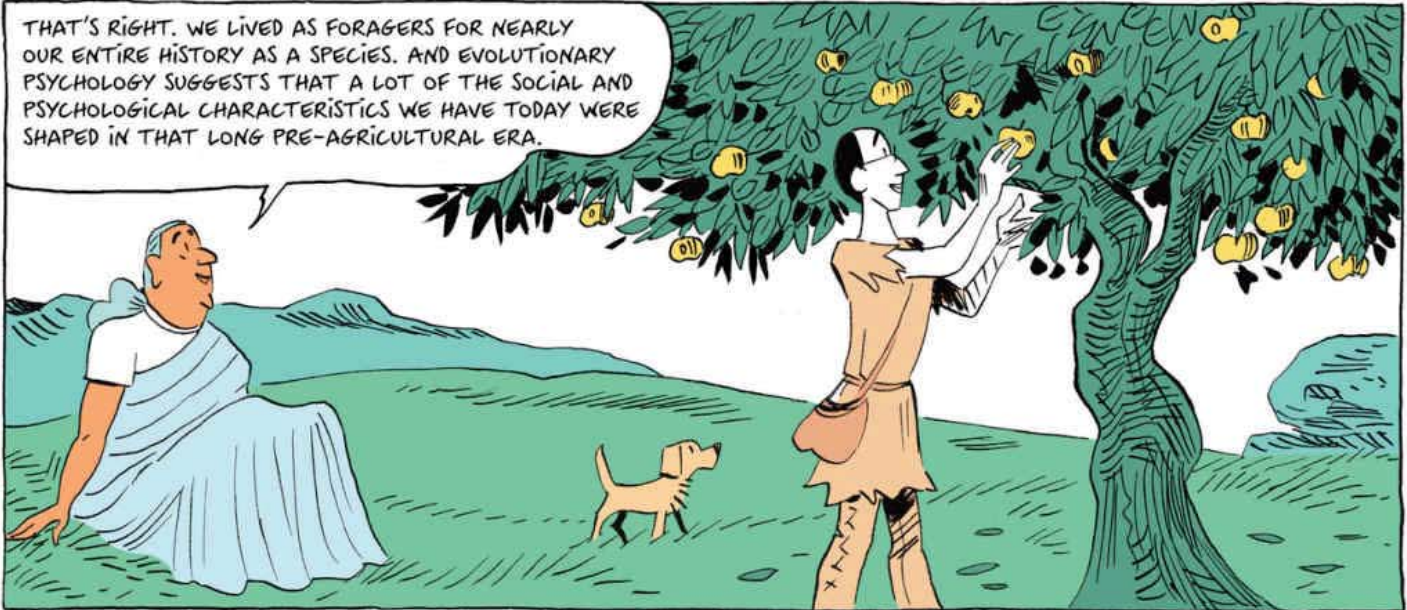








THAT'S RIGHT. WE LIVED AS FORAGERS FOR NEARLY OUR ENTIRE HISTORY AS A SPECIES. AND EVOLUTIONARY PSYCHOLOGY SUGGESTS THAT A LOT OF THE SOCIAL AND PSYCHOLOGICAL CHARACTERISTICS WE HAVE TODAY WERE SHAPED IN THAT LONG PRE-AGRICULTURAL ERA.

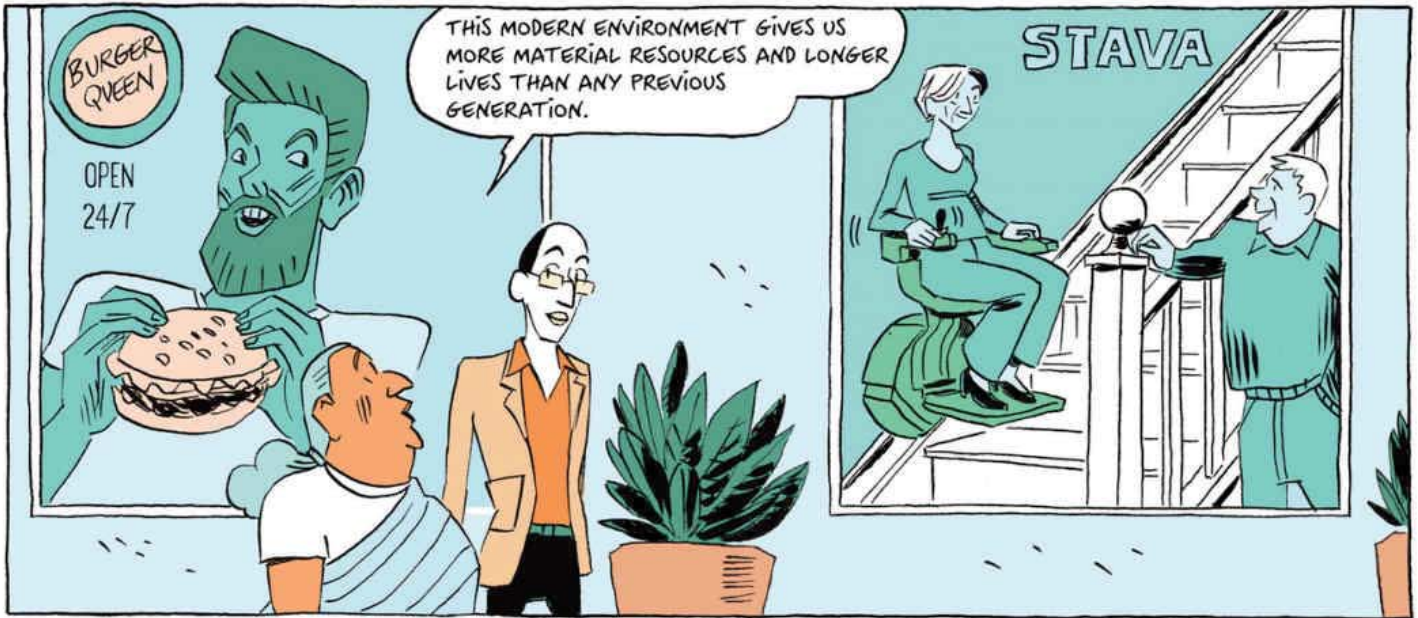


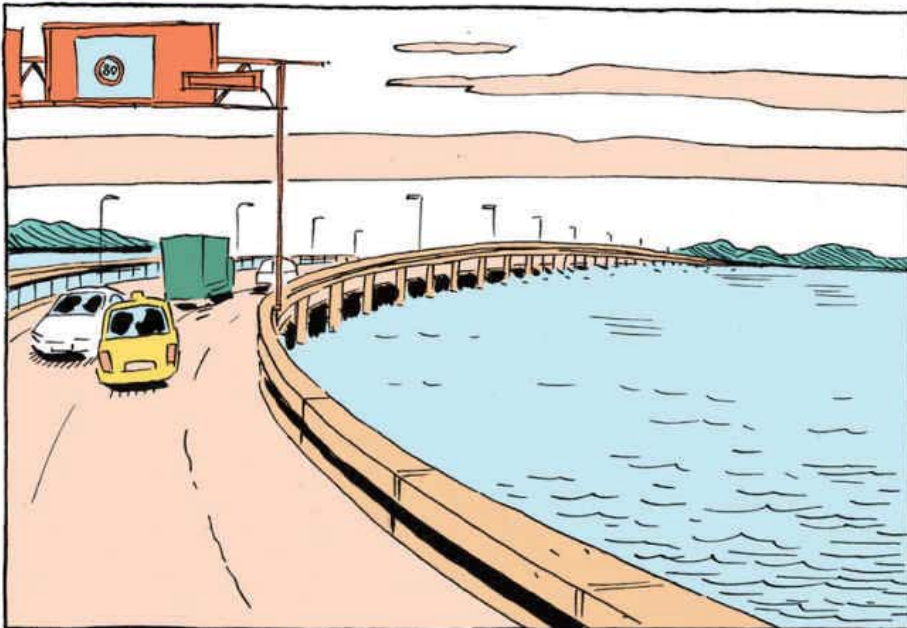
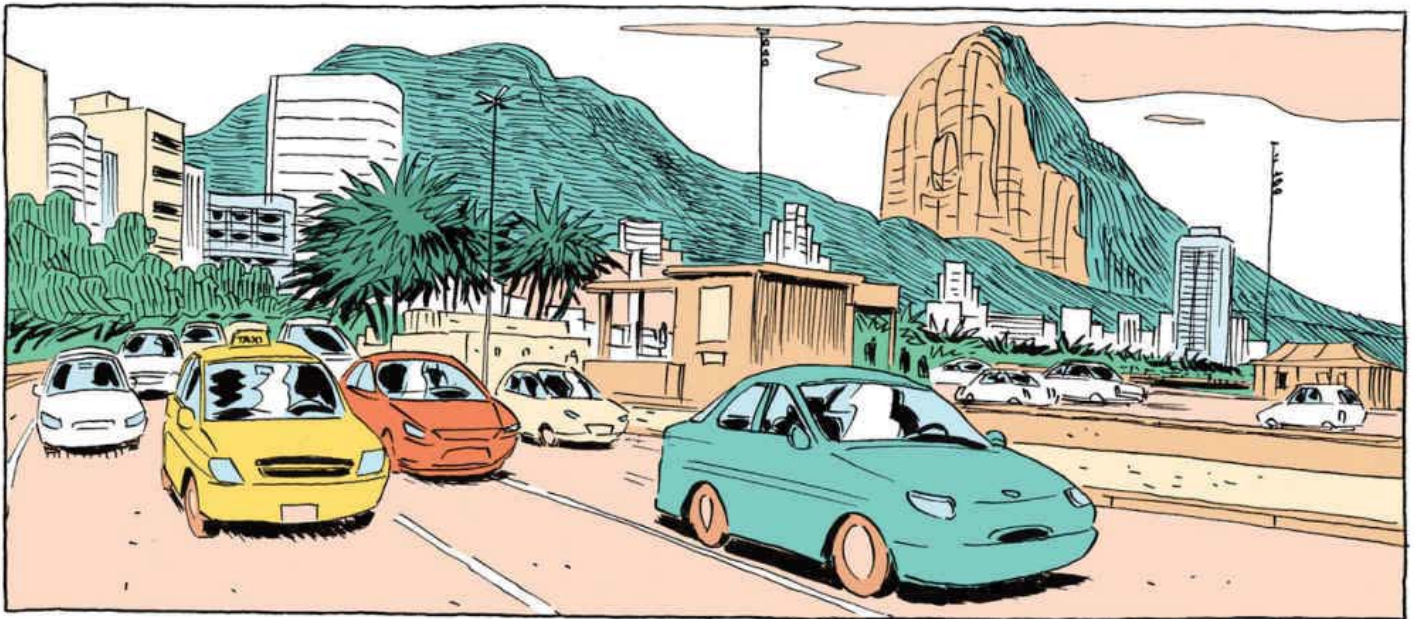
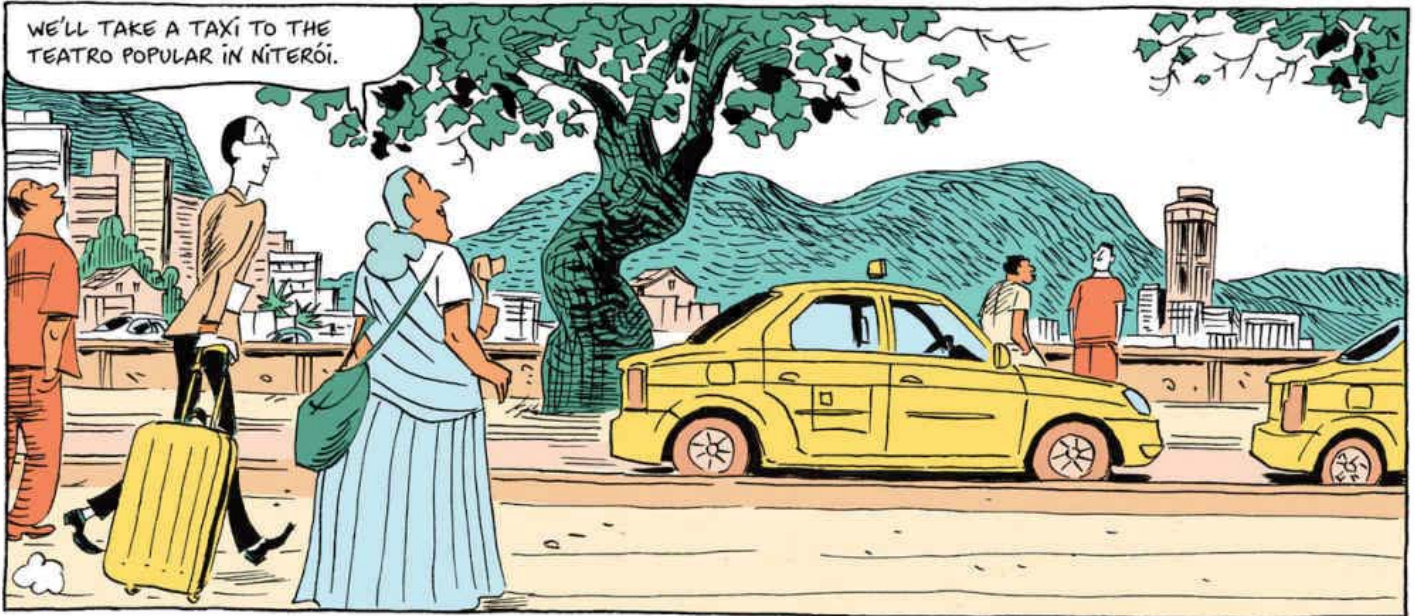
SO OUR BRAINS ARE STILL ADAPTED FOR LIFE AS HUNTER-GATHERERS.

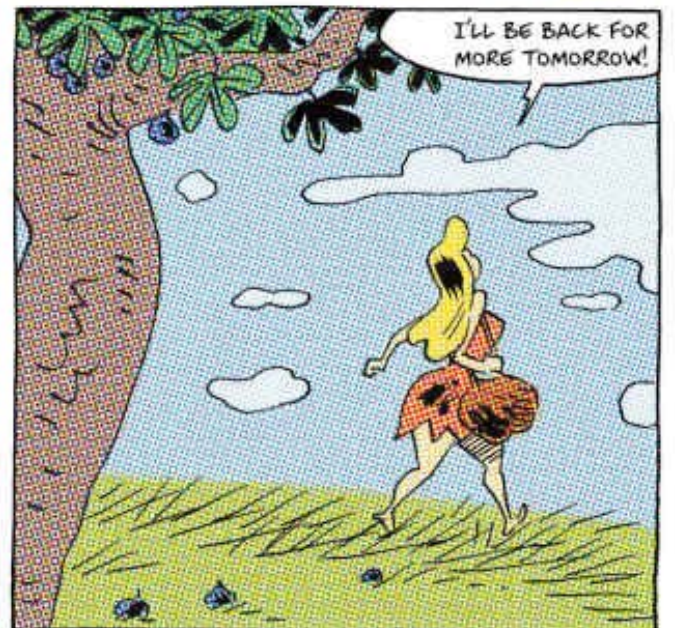
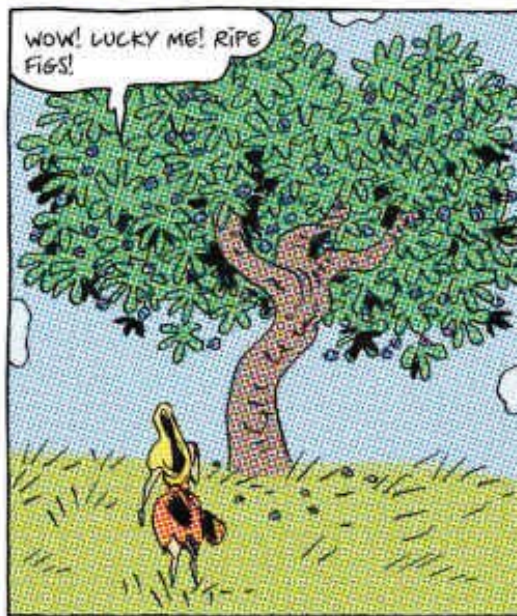
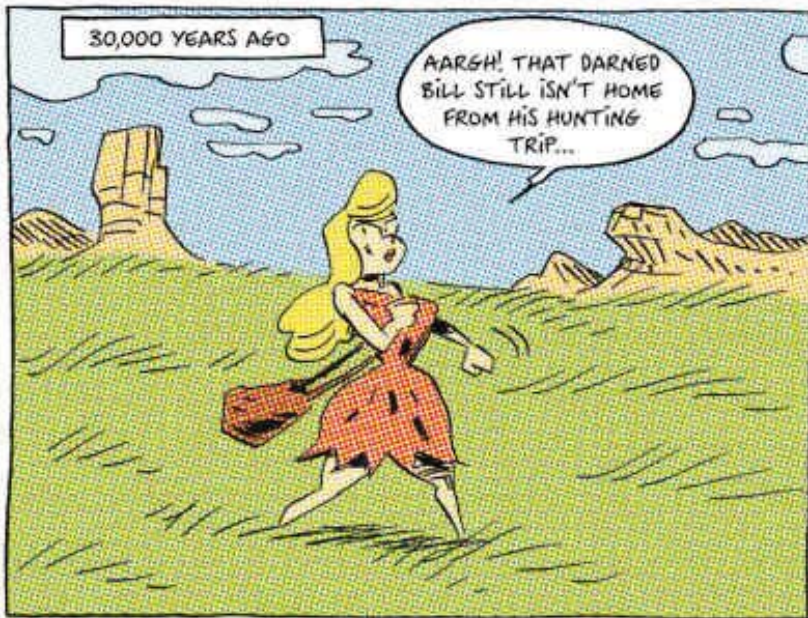


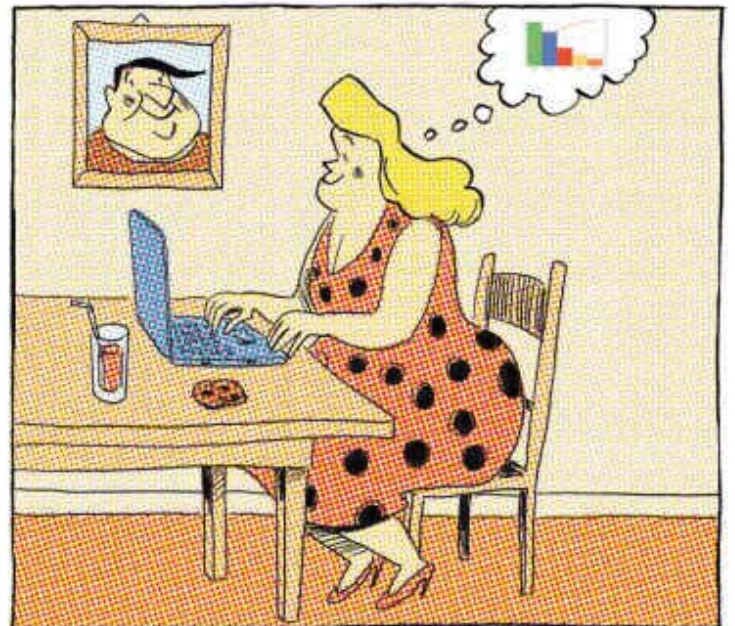
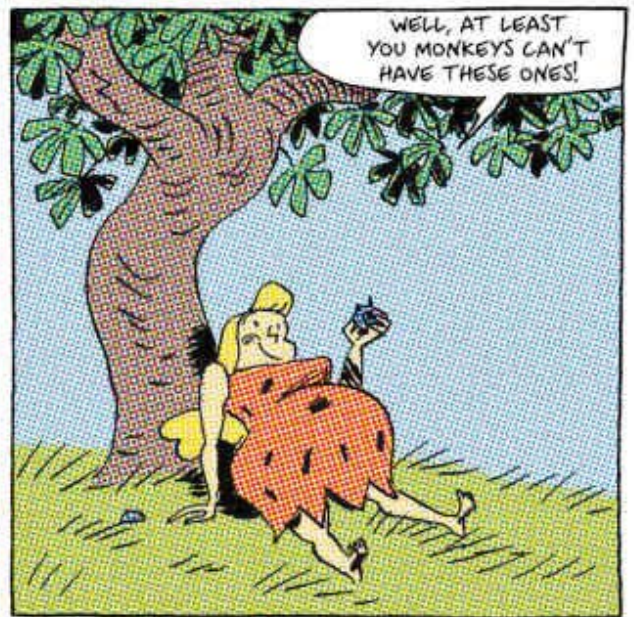
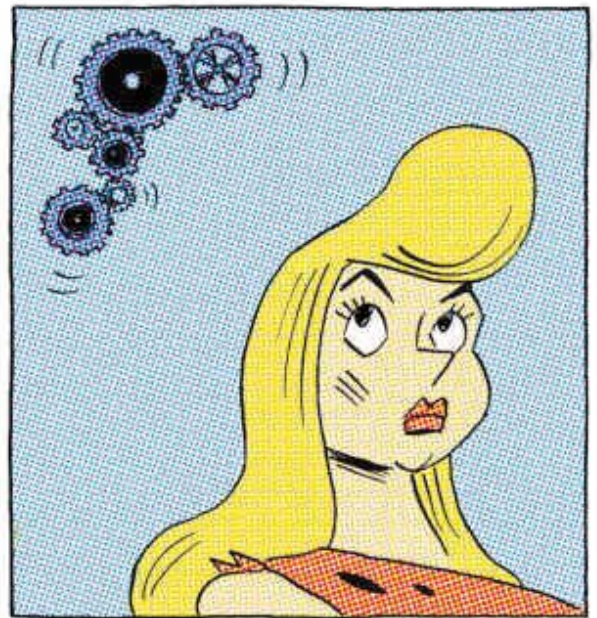
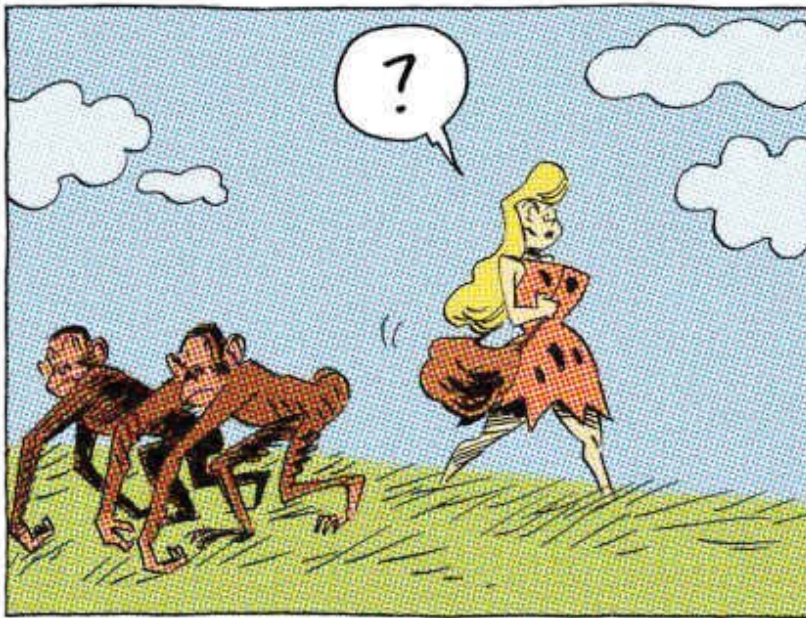
OUR EATING HABITS, OUR CONFLICTS AND OUR SEXUALITY ARE ALL THE RESULT OF OUR HUNTER-GATHERER MINDS GRAPPLING WITH A POST-INDUSTRIAL WORLD.







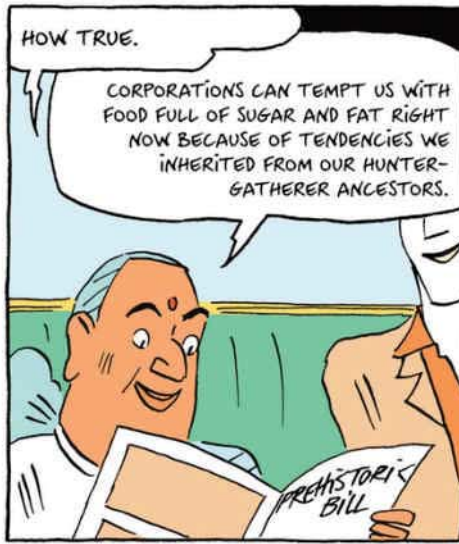






I SEE ZOE'S GIVEN YOU THE COMICS BUG.

YES, IT'S REALLY GOOD, HERE, TAKE A LOOK.



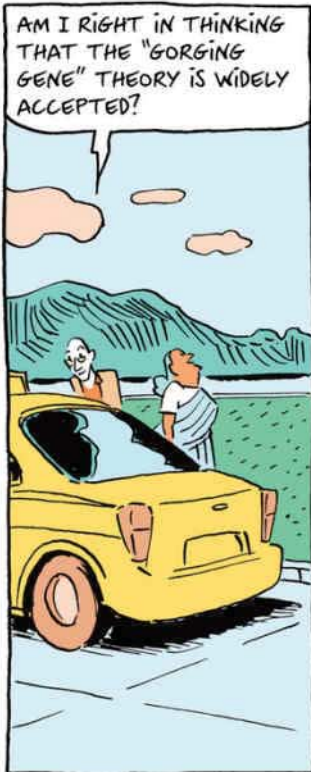
HOW TRUE.

CORPORATIONS CAN TEMPT US WITH FOOD FULL OF SUGAR AND FAT RIGHT NOW BECAUSE OF TENDENCIES WE INHERITED FROM OUR HUNTER-GATHERER ANCESTORS.

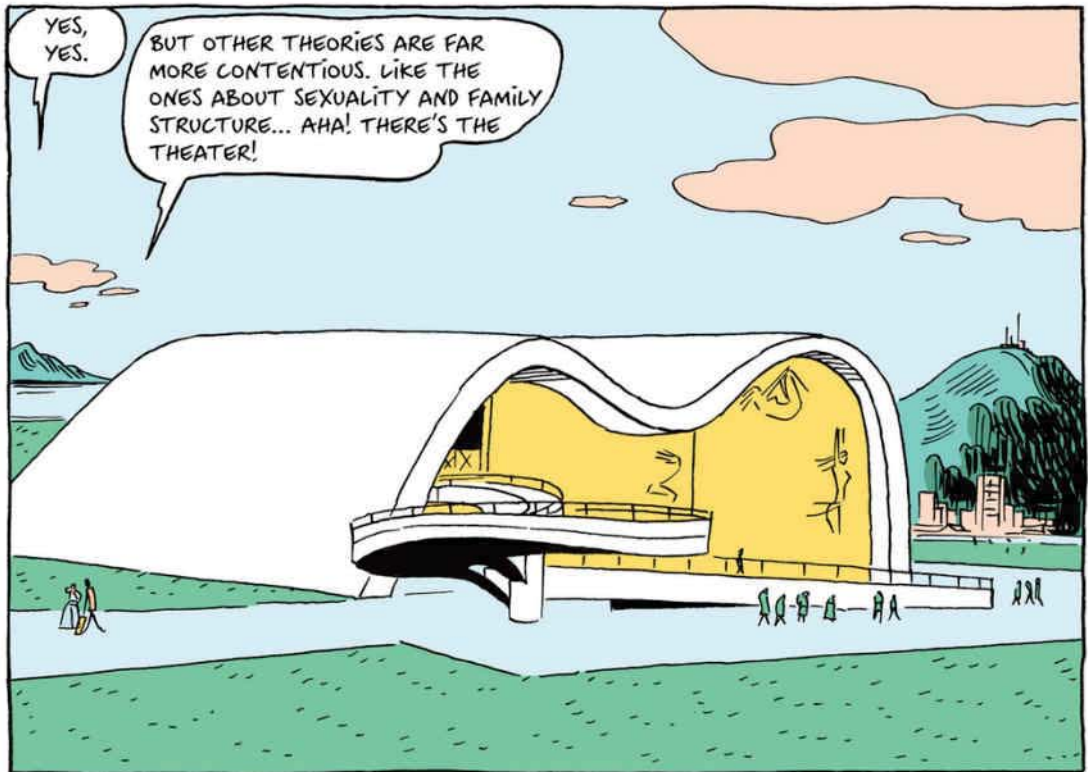


THESE DAYS OBESITY AND DIABETES KILL MORE PEOPLE THAN WARS DO. BUT LIKING SUGAR AND FAT WAS PERFECTLY LOGICAL IN THE STONE AGE, AND IT'S NOW HARD-WIRED INTO OUR GENES. OUR DNA THINKS WE'RE STILL ON THE SAVANNA...

AH! WE'RE HERE ALREADY!

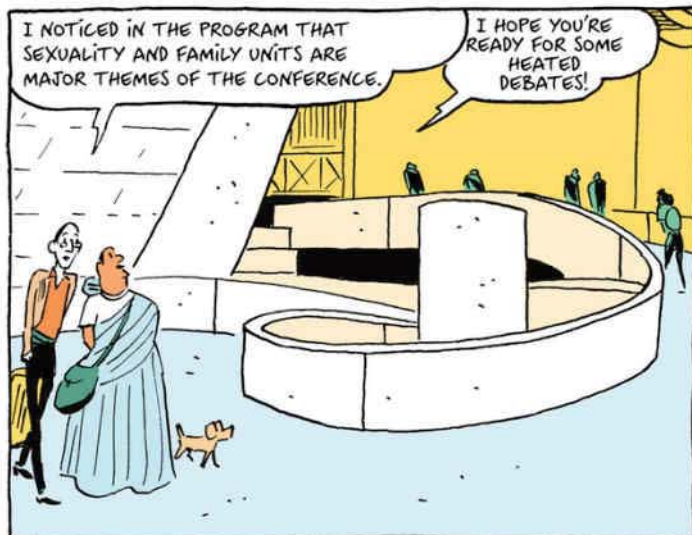


AM I RIGHT IN THINKING THAT THE "GORGING GENE" THEORY IS WIDELY ACCEPTED?



YES, YES.

BUT OTHER THEORIES ARE FAR MORE CONTENTIOUS. LIKE THE ONES ABOUT SEXUALITY AND FAMILY STRUCTURE... AHA! THERE'S THE THEATER!

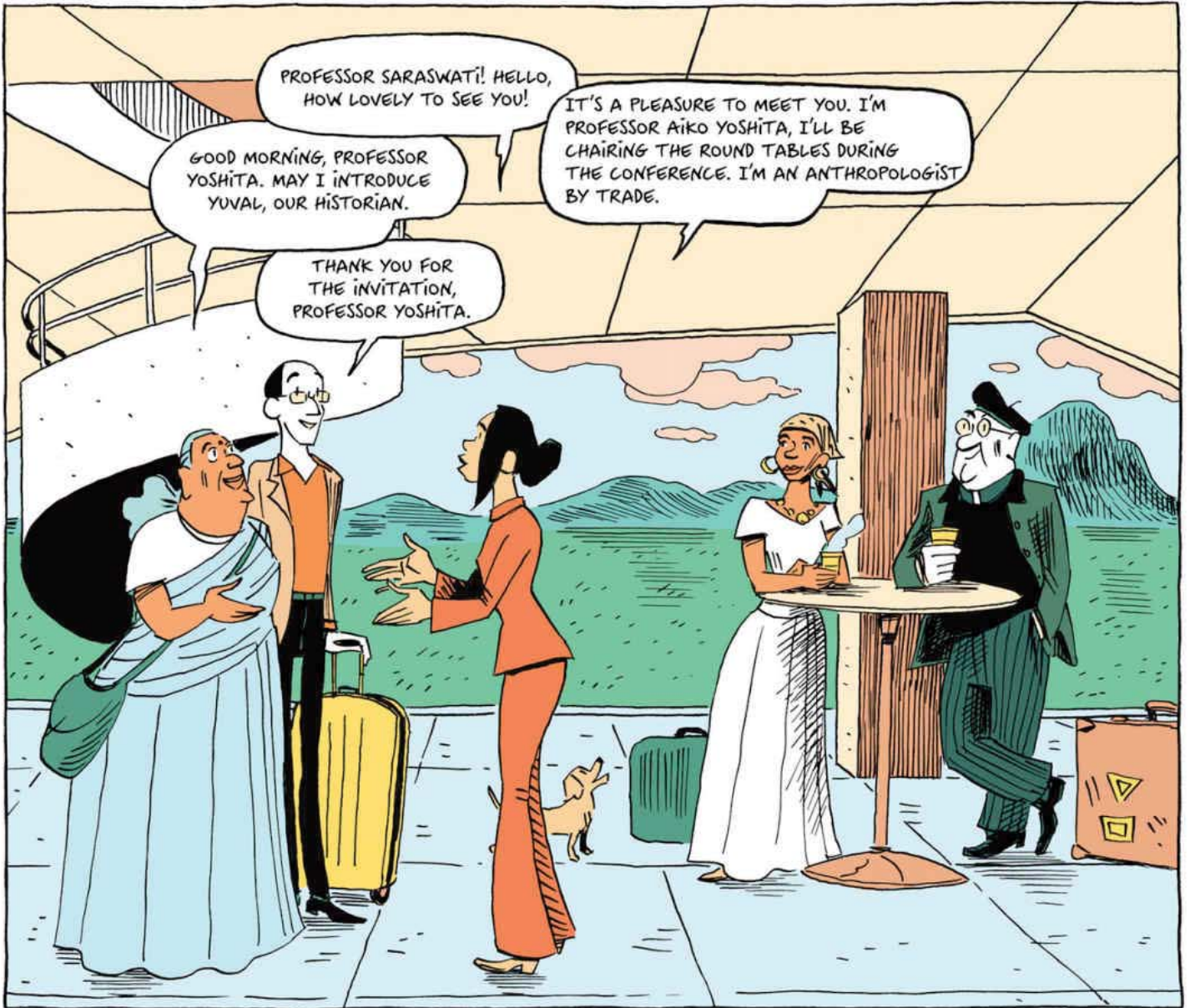


I NOTICED IN THE PROGRAM THAT SEXUALITY AND FAMILY UNITS ARE MAJOR THEMES OF THE CONFERENCE.

I HOPE YOU'RE READY FOR SOME HEATED DEBATES!



HERE WE ARE! AND ON TIME!

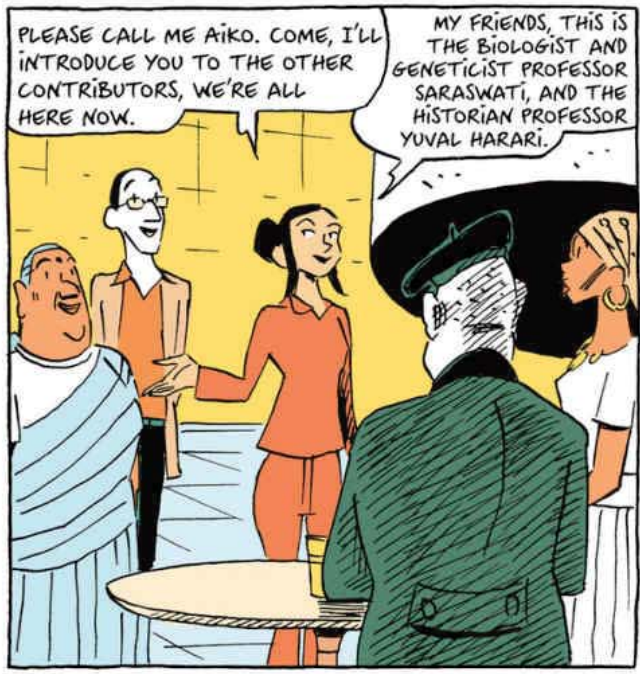


PROFESSOR SARASWATI! HELLO, HOW LOVELY TO SEE YOU!

GOOD MORNING, PROFESSOR YOSHITA. MAY I INTRODUCE YUVAL, OUR HISTORIAN.

IT'S A PLEASURE TO MEET YOU. I'M PROFESSOR AIKO YOSHITA, I'LL BE CHAIRING THE ROUND TABLES DURING THE CONFERENCE. I'M AN ANTHROPOLOGIST BY TRADE.

THANK YOU FOR THE INVITATION, PROFESSOR YOSHITA.



PLEASE CALL ME AIKO. COME, I'LL INTRODUCE YOU TO THE OTHER CONTRIBUTORS, WE'RE ALL HERE NOW.

MY FRIENDS, THIS IS THE BIOLOGIST AND GENETICIST PROFESSOR SARASWATI, AND THE HISTORIAN PROFESSOR YUVAL HARARI.

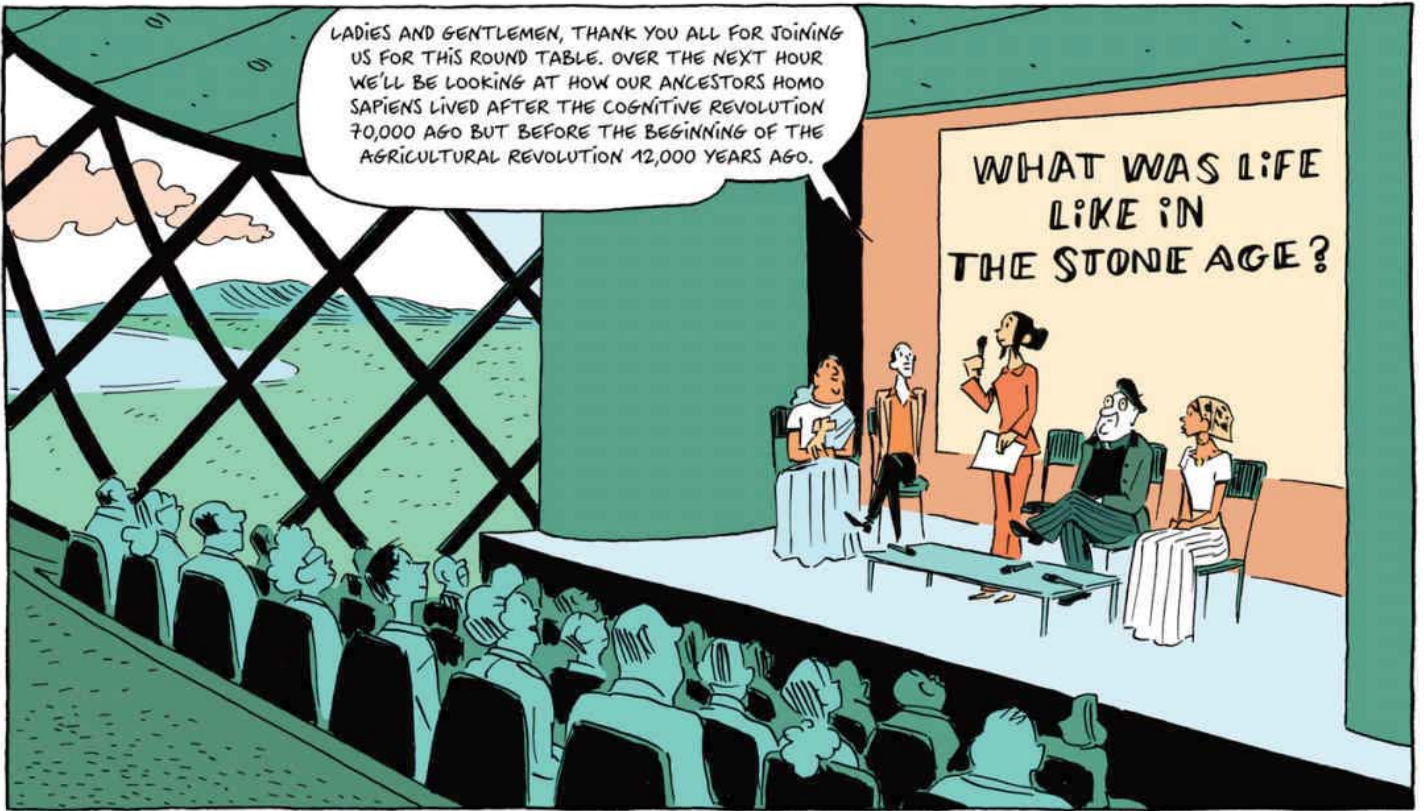


THIS IS DR. DUARTE, SHE'S AN ANTHROPOLOGIST AND GEOGRAPHER WHO LIVES RIGHT HERE IN RIO.



AND THE FAMOUS ARCHAEOLOGIST HERR DOCTOR FATHER KLÜG.

THE AUDIENCE MUST BE WAITING FOR US. PLEASE, FOLLOW ME.

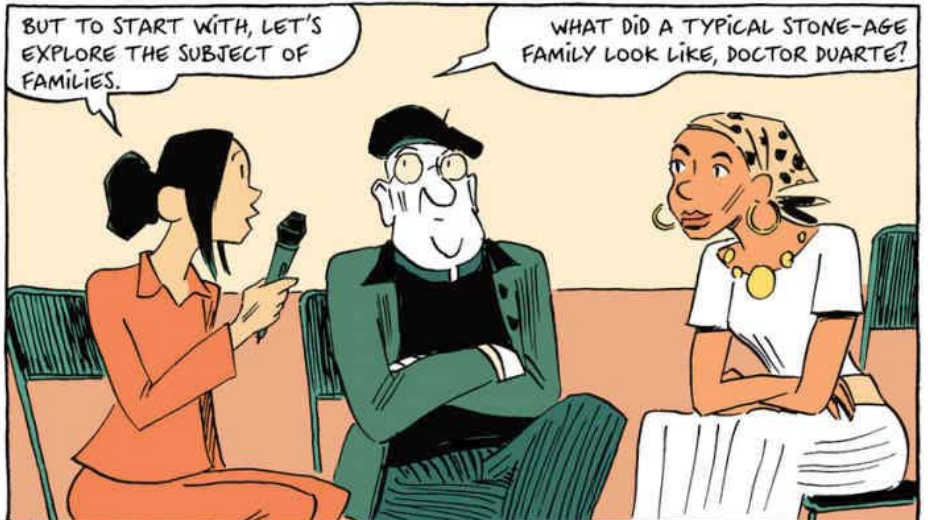


LADIES AND GENTLEMEN, THANK YOU ALL FOR JOINING US FOR THIS ROUND TABLE. OVER THE NEXT HOUR WE'LL BE LOOKING AT HOW OUR ANCESTORS HOMO SAPIENS LIVED AFTER THE COGNITIVE REVOLUTION 70,000 AGO BUT BEFORE THE BEGINNING OF THE AGRICULTURAL REVOLUTION 12,000 YEARS AGO.

WHAT WAS LIFE LIKE IN THE STONE AGE?

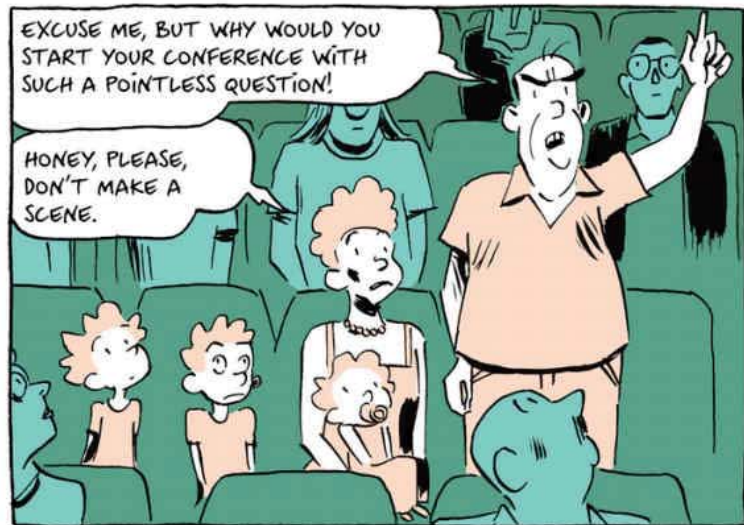


WE'LL ALSO CONSIDER HOW WE KNOW THE THINGS THAT WE THINK WE KNOW. HOW CAN WE KNOW IF WE FOUGHT WARS 30,000 YEARS AGO? HOW DO WE ESTABLISH WHETHER WE HAD RELIGIOUS BELIEFS?



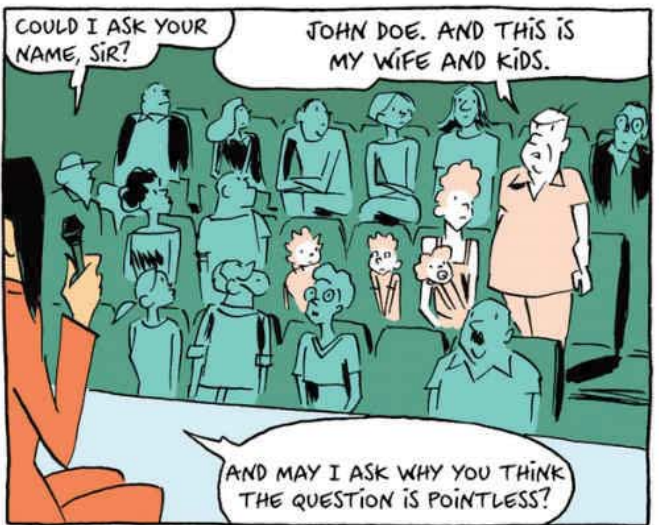
BUT TO START WITH, LET'S EXPLORE THE SUBJECT OF FAMILIES.

WHAT DID A TYPICAL STONE-AGE FAMILY LOOK LIKE, DOCTOR DUARTE?



EXCUSE ME, BUT WHY WOULD YOU START YOUR CONFERENCE WITH SUCH A POINTLESS QUESTION!

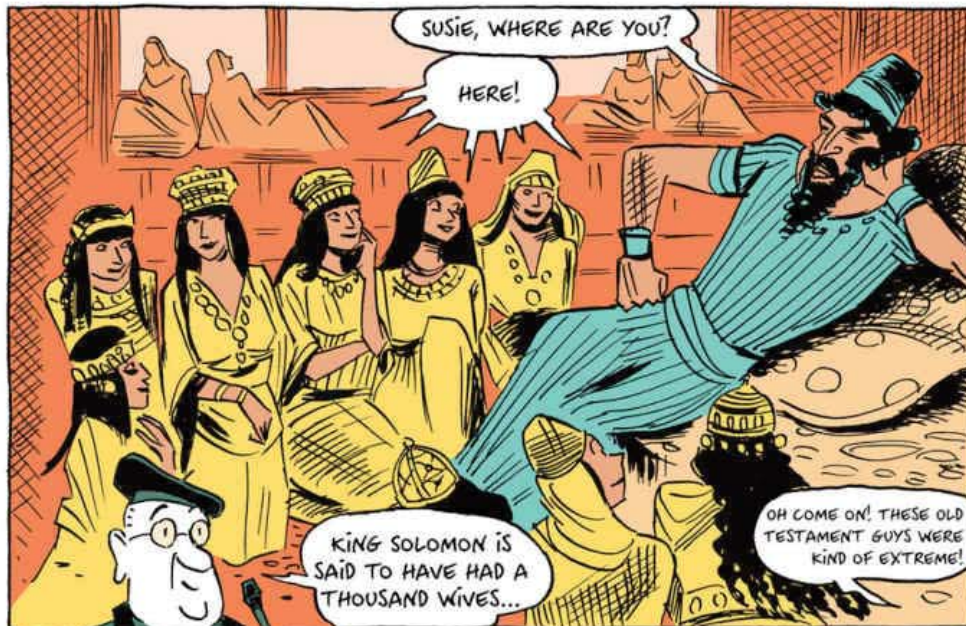
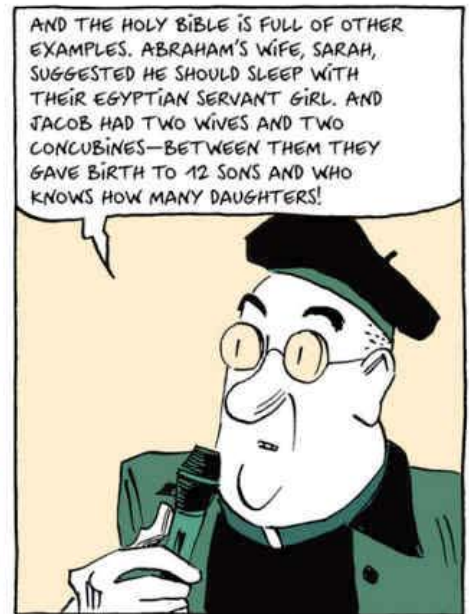
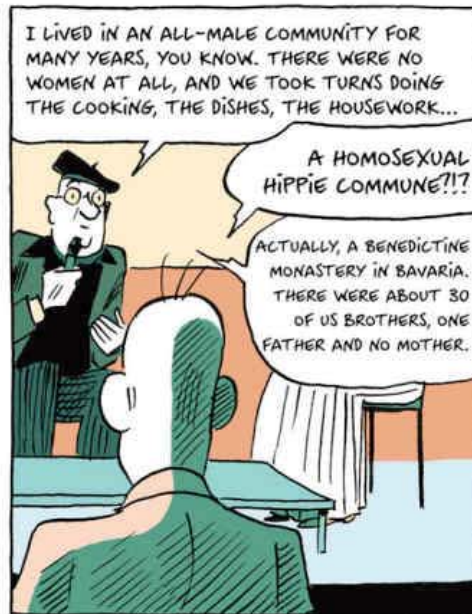
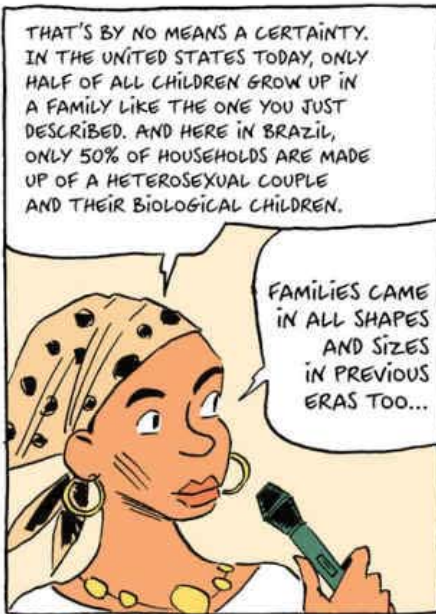
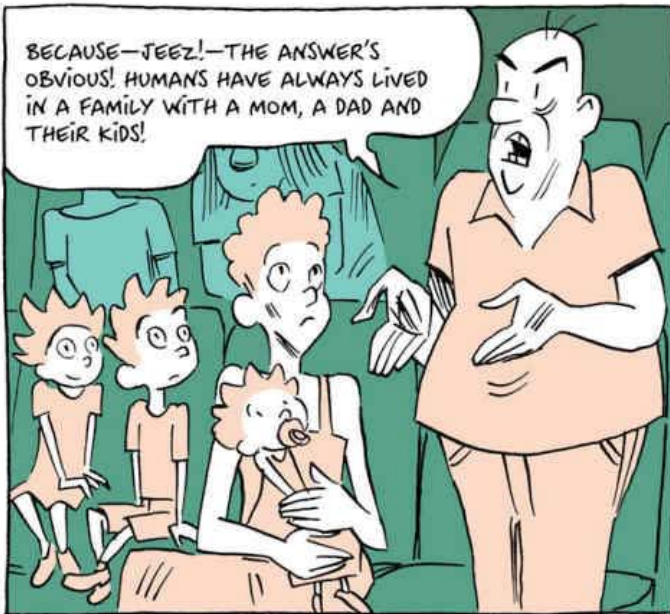
HONEY, PLEASE, DON'T MAKE A SCENE.

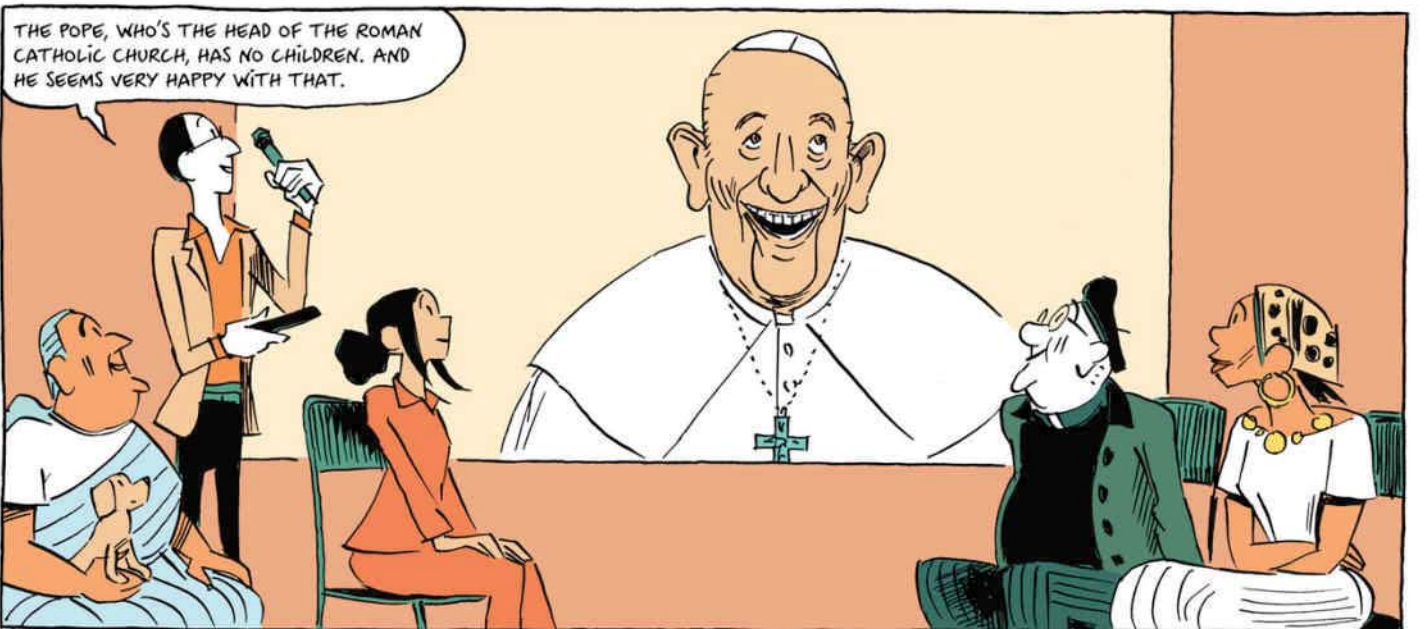
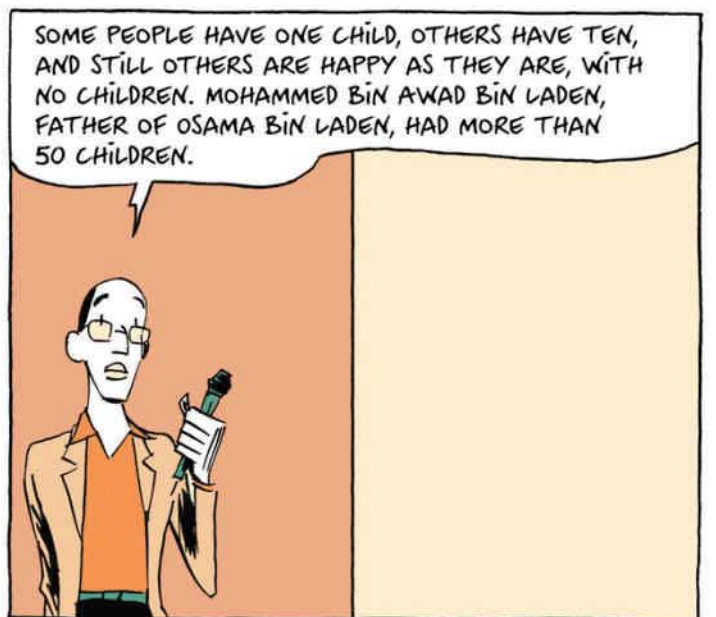
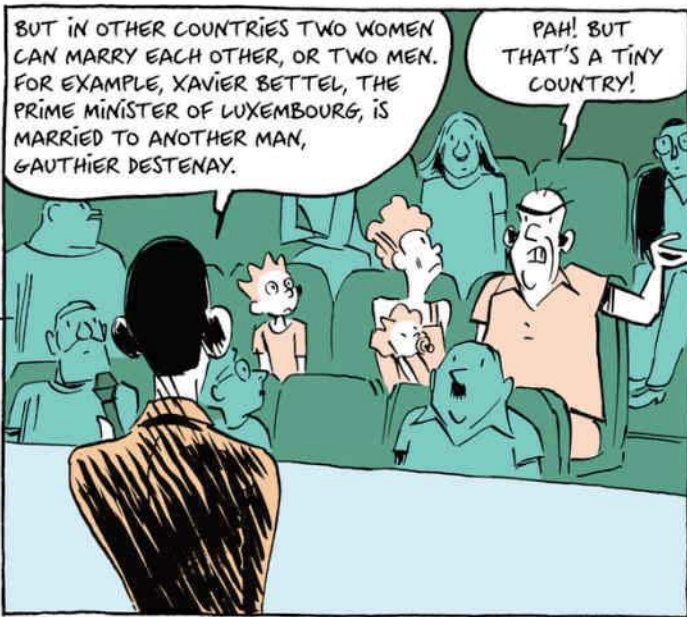
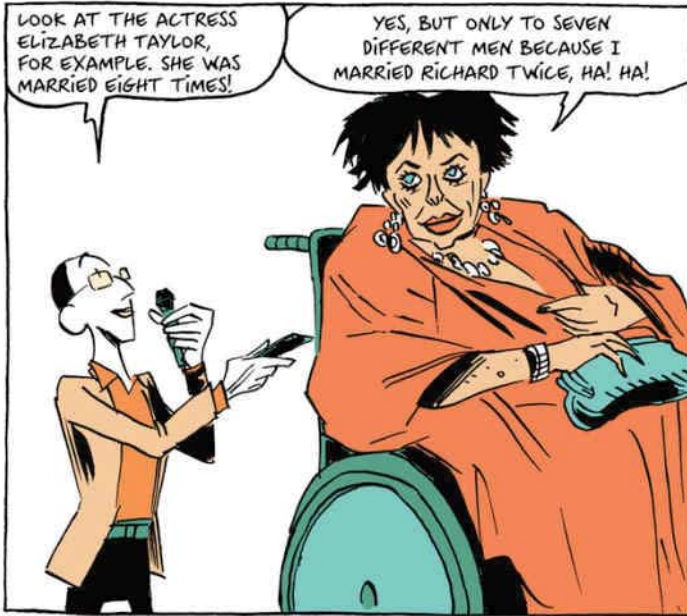


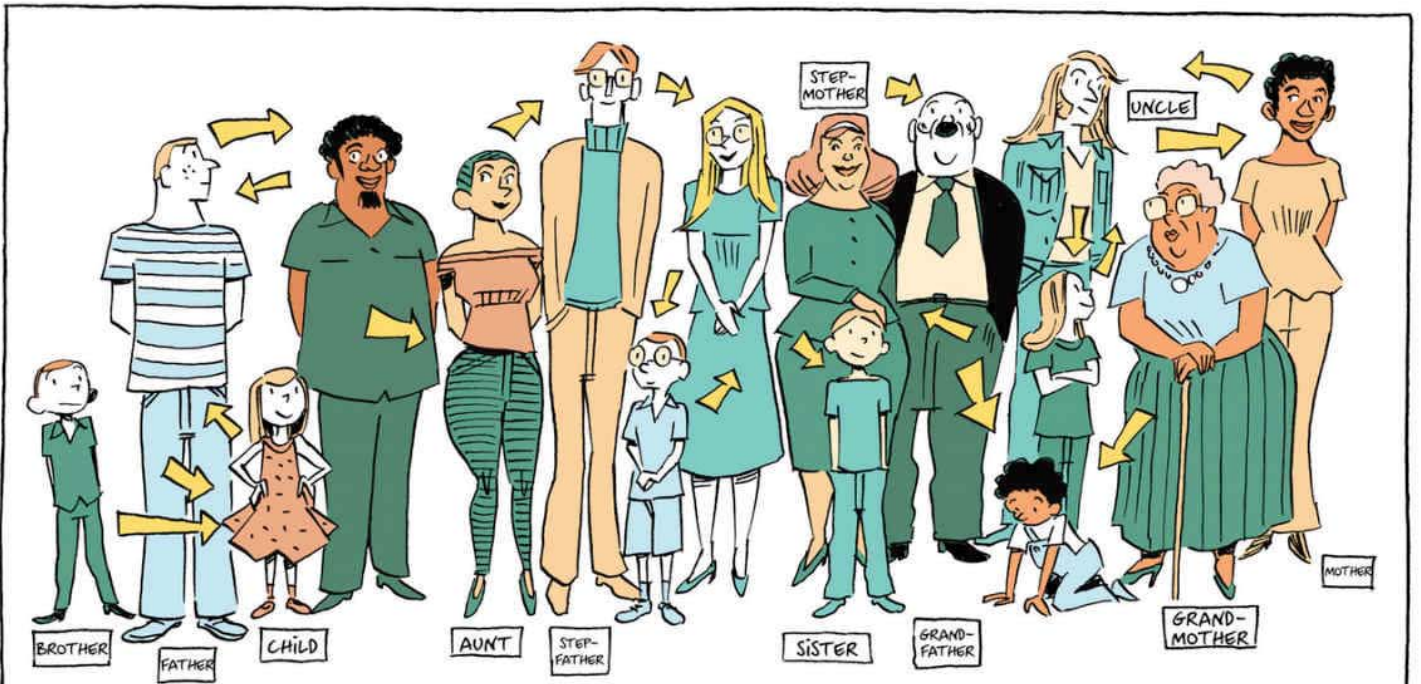
COULD I ASK YOUR NAME, SIR?

JOHN DOE. AND THIS IS MY WIFE AND KIDS.

AND MAY I ASK WHY YOU THINK THE QUESTION IS POINTLESS?







SOME CHILDREN ARE RAISED BY A SINGLE MOTHER, OR A SINGLE FATHER, OR MAYBE BY GRANDPARENTS. SOME CHILDREN ARE ADOPTED. SOME CHILDREN HAVE TWO FATHERS, OTHERS HAVE TWO MOTHERS.

SOMETIMES, PARENTS SEPARATE AND THEN FIND NEW PARTNERS, SO A CHILD CAN HAVE A MOTHER AND A FATHER BUT ALSO A STEPFATHER AND A STEPMOTHER.

IN SOME FAMILIES DOZENS OF AUNTS, UNCLES, COUSINS AND GRANDPARENTS ALL LIVE TOGETHER... SO YOU MIGHT SHARE A BEDROOM WITH YOUR COUSIN INSTEAD OF YOUR BROTHER, AND YOUR UNCLE OR YOUR GRANDMOTHER MIGHT MAKE YOUR BREAKFAST EVERY DAY INSTEAD OF YOUR PARENTS.

THERE ARE SO MANY VARIATIONS!

BUT THERE'S ONLY ONE THAT'S NATURAL! ALL THE OTHERS ARE... WELL, THEY'RE NOT NATURAL!



NOT NATURAL? MAYBE OUR PRIMATE COUSINS CAN TEACH US SOMETHING ABOUT NATURAL FAMILIES...



GIBBONS USUALLY LIVE IN COUPLES. WHEN A MALE AND A FEMALE FORM A COUPLE, THEY TEND TO STAY TOGETHER FOR MANY YEARS. THEY LIVE ALONE TOGETHER, IN THEIR OWN PART OF THE FOREST, AND LOOK AFTER THEIR OWN YOUNG.



THERE! YOU SEE!
IT'S NATURAL!

BUT WAIT... WITH GORILLAS, IT'S FAR MORE COMMON FOR A MALE TO LIVE WITH A HAREM OF MANY FEMALES AND ALL OF THEIR YOUNG. EACH BABY GORILLA HAS A DIFFERENT MOTHER, BUT THEY ALL HAVE THE SAME FATHER.



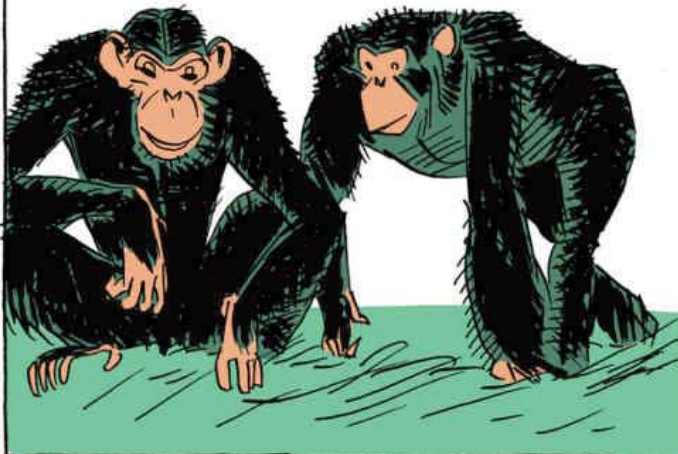
ORANGUTANS LIKE THEIR SOLITUDE, THEY ENJOY SITTING ALONE PEACEFULLY, PERHAPS JUST WATCHING THE SUNSET. ORANGUTAN MOTHERS ARE ALMOST ALWAYS SINGLE PARENTS. THEY RAISE THEIR CHILDREN SINGLE-HANDED. AND WHEN THE YOUNG MATURE, THEY LEAVE TO GO AND LIVE ON THEIR OWN. THAT'S THE WAY THEY LIKE IT.



CHIMPANZEES ARE THE EXACT OPPOSITE OF ORANGUTANS. THEY LIVE IN NOISY COMMUNITIES OF LOTS OF MALES AND FEMALES TOGETHER. THEY DON'T FORM LASTING COUPLES. YOUNG CHIMPS STAY VERY CLOSE TO THEIR MOTHERS, BUT USUALLY DON'T EVEN KNOW WHO THEIR FATHER IS. THE WORD "FATHER" PROBABLY WOULDN'T MEAN MUCH TO THEM.



IN ONE TYPE OF CHIMPANZEE, KNOWN AS THE COMMON CHIMPANZEE, THE MALES HANG OUT TOGETHER, AND THE MOST POWERFUL MALE IS THE LEADER OF THE WHOLE GROUP.



BUT WITH ANOTHER TYPE OF CHIMPANZEES, BONOBOS, THE FEMALES FORM VERY CLOSE FRIENDSHIPS—SEX INCLUDED! THEY HELP EACH OTHER RAISE THEIR YOUNG, AND THEY'RE THE ONES WHO MAKE DECISIONS, NOT THE ADULT MALES. LITTLE BONOBO GIRLS DON'T DREAM ABOUT MARRYING A PRINCE. MOST OF THEM WOULD PREFER A COOL GIRLFRIEND INSTEAD.



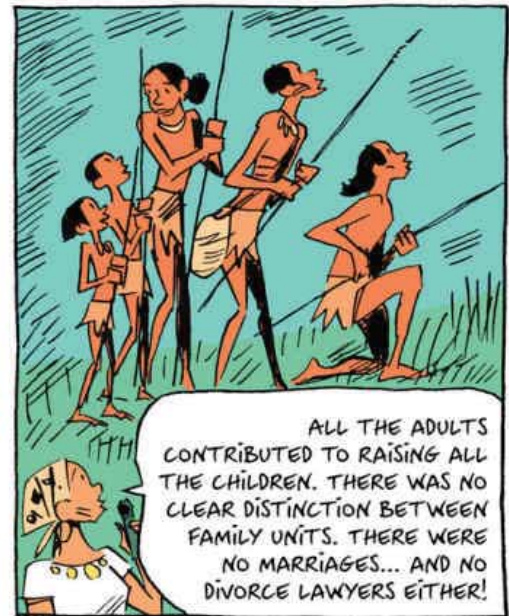


OK, SO I DIDN'T KNOW ALL THAT... BUT YOU'RE TALKING ABOUT FREAKING APES! I WANNA KNOW HOW HUMAN FAMILIES LIVED IN THE STONE AGE!

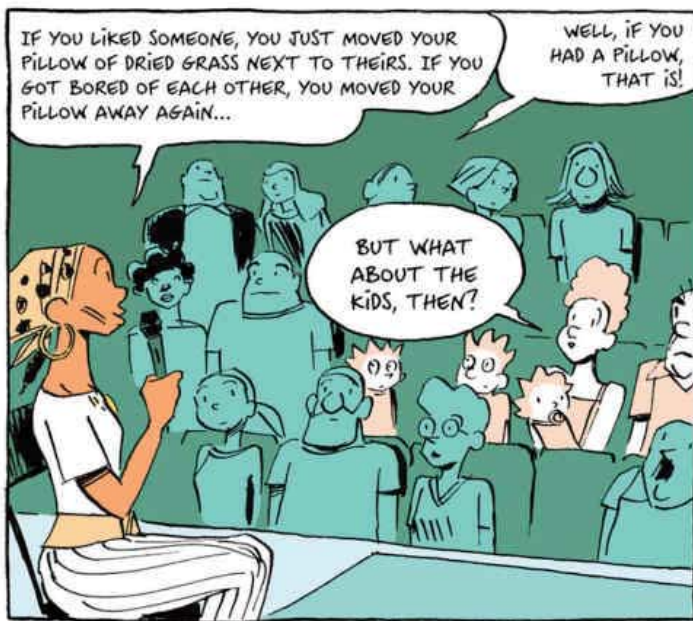
THAT'S EXACTLY THE QUESTION WE'RE TRYING TO ANSWER... SO, I HOPE YOU'LL AGREE, IT'S NOT POINTLESS, AFTER ALL.



IF I COULD JUMP IN HERE, SOME ANTHROPOLOGISTS THINK THAT THE MOST COMMON ARRANGEMENT DURING THE STONE AGE WAS TO LIVE IN LARGE FAMILY COMMUNITIES, RATHER LIKE CHIMPANZEES.



ALL THE ADULTS CONTRIBUTED TO RAISING ALL THE CHILDREN. THERE WAS NO CLEAR DISTINCTION BETWEEN FAMILY UNITS. THERE WERE NO MARRIAGES... AND NO DIVORCE LAWYERS EITHER!



IF YOU LIKED SOMEONE, YOU JUST MOVED YOUR PILLOW OF DRIED GRASS NEXT TO THEIRS. IF YOU GOT BORED OF EACH OTHER, YOU MOVED YOUR PILLOW AWAY AGAIN...

WELL, IF YOU HAD A PILLOW, THAT IS!

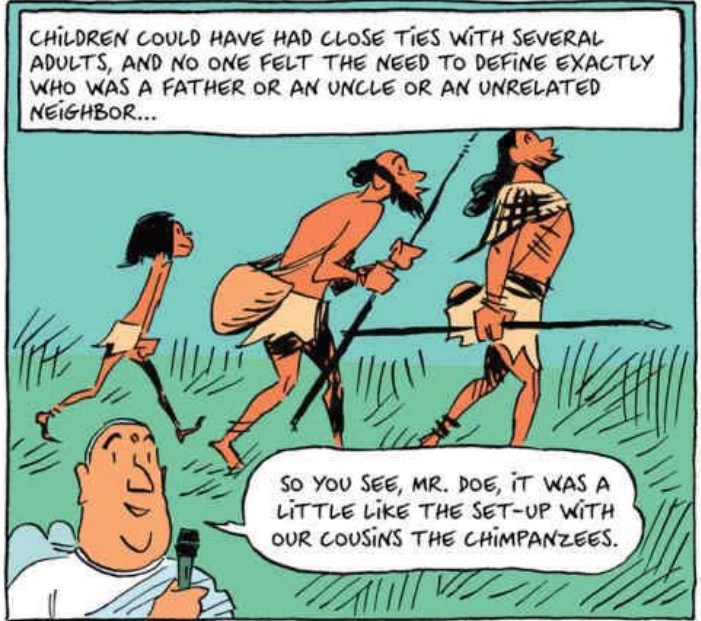
BUT WHAT ABOUT THE KIDS, THEN?



CHILDREN KNEW WHO THEIR MOTHER WAS, OBVIOUSLY. BECAUSE THEIR MOTHERS GAVE BIRTH TO THEM AND LOOKED AFTER THEM FOR YEARS.



BUT WE CAN'T BE SURE THAT THEY KNEW WHO THEIR FATHER WAS. THE MEN PROBABLY HELPED RAISE ALL THE CHILDREN BY BRINGING FOOD, PROTECTING THEM, TEACHING THEM TO CLIMB TREES OR MAKE STONE TOOLS...



CHILDREN COULD HAVE HAD CLOSE TIES WITH SEVERAL ADULTS, AND NO ONE FELT THE NEED TO DEFINE EXACTLY WHO WAS A FATHER OR AN UNCLE OR AN UNRELATED NEIGHBOR...

SO YOU SEE, MR. DOE, IT WAS A LITTLE LIKE THE SET-UP WITH OUR COUSINS THE CHIMPANZEES.

ANTHROPOLOGISTS HAVE ACTUALLY OBSERVED SOME PRESENT-DAY HUMAN CULTURES THAT PRACTICE COLLECTIVE FATHERHOOD.



THE BARI INDIANS, FOR EXAMPLE. THEY BELIEVE THAT A CHILD ISN'T BORN FROM THE SPERM OF JUST ONE MAN, BUT FROM THE ACCUMULATION OF SPERM FROM DIFFERENT MEN IN A WOMAN'S WOMB.



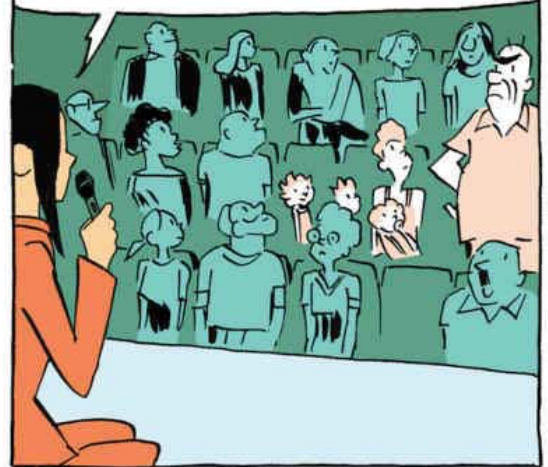
SO A GOOD MOTHER MAKES A POINT OF HAVING SEX WITH SEVERAL MEN, ESPECIALLY WHEN SHE'S PREGNANT, SO THAT HER CHILD INHERITS GOOD QUALITIES—AND ENJOYS PATERNAL CARE—FROM NOT JUST THE BEST HUNTER, BUT ALSO THE BEST STORYTELLER, THE BRAVEST WARRIOR AND THE MOST CONSIDERATE LOVER.



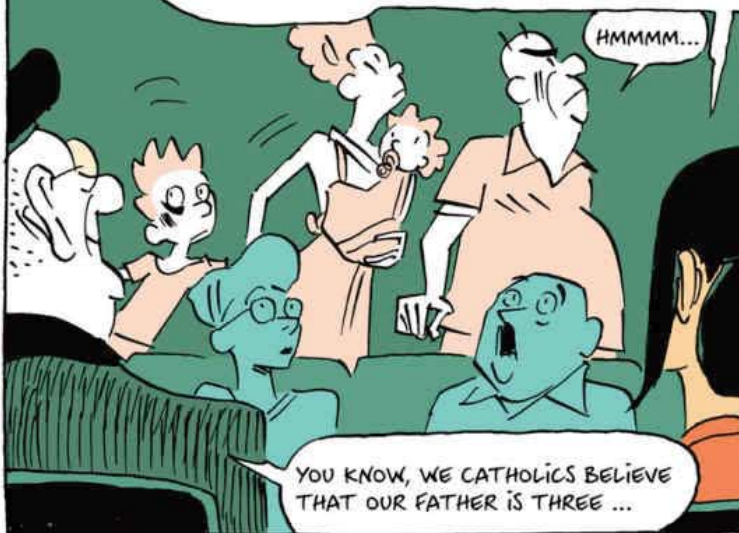
THIS IS TOTALLY CRAZY! COME ON, HONEY, WE'RE LEAVING! THESE SCIENTISTS ARE TREATING US LIKE IDIOTS!



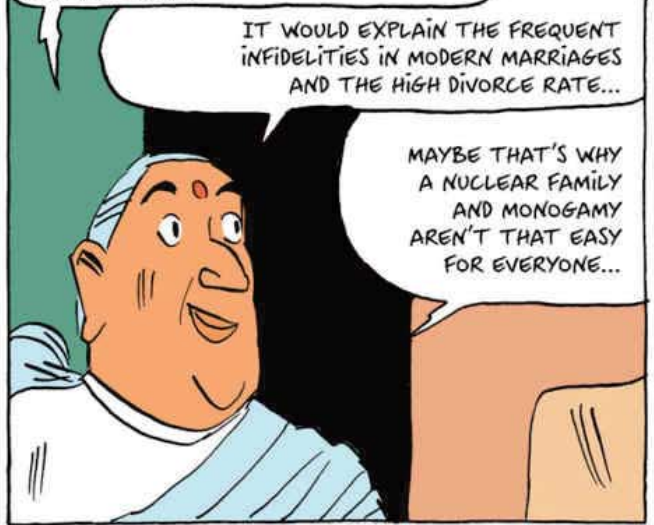
WE'RE VERY SORRY WE UPSET YOU, MR. DOE. BUT DON'T FORGET THAT, BEFORE OUR MODERN BOOM IN EMBRYOLOGICAL STUDIES, THERE WAS NO WAY OF PROVING THAT A BABY WAS ALWAYS PRODUCED BY A SINGLE FATHER'S SPERM.

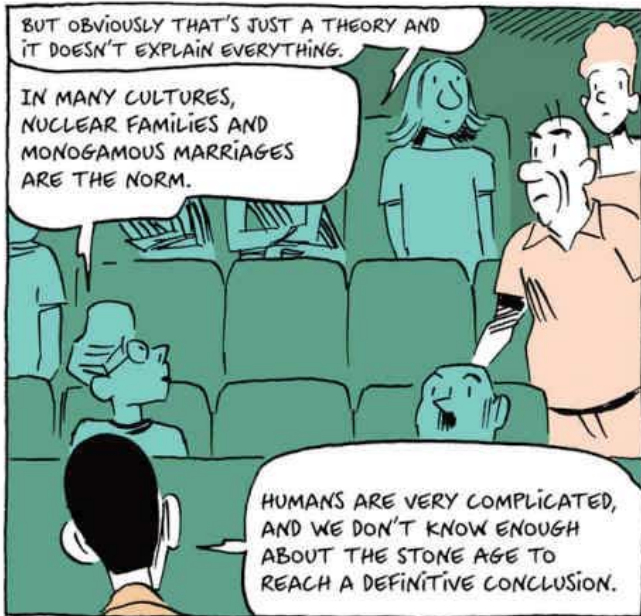


PICTURE YOURSELF IN AN ANCIENT HUNTER-GATHERER TRIBE. HOW COULD YOU PROVE TO PEOPLE THAT EVERY CHILD HAD JUST ONE FATHER, AND NEVER THREE?



IF EARLY HUMANS REALLY DID LIVE IN LARGE COMMUNAL FAMILIES LIKE CHIMPANZEES, THAT WOULD EXPLAIN A LOT...





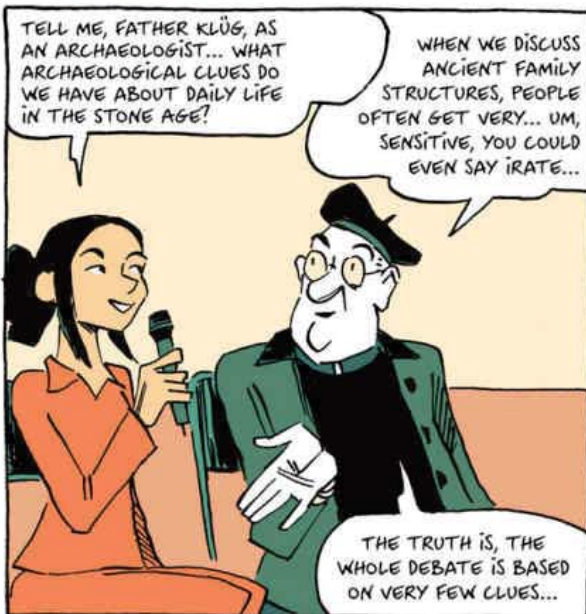
BUT OBVIOUSLY THAT'S JUST A THEORY AND IT DOESN'T EXPLAIN EVERYTHING.

IN MANY CULTURES, NUCLEAR FAMILIES AND MONOGAMOUS MARRIAGES ARE THE NORM.

HUMANS ARE VERY COMPLICATED, AND WE DON'T KNOW ENOUGH ABOUT THE STONE AGE TO REACH A DEFINITIVE CONCLUSION.



THEORIES ARE IMPORTANT TO SCIENTISTS, BUT AT THE END OF THE DAY, IT'S ALL ABOUT HAVING PROOF...



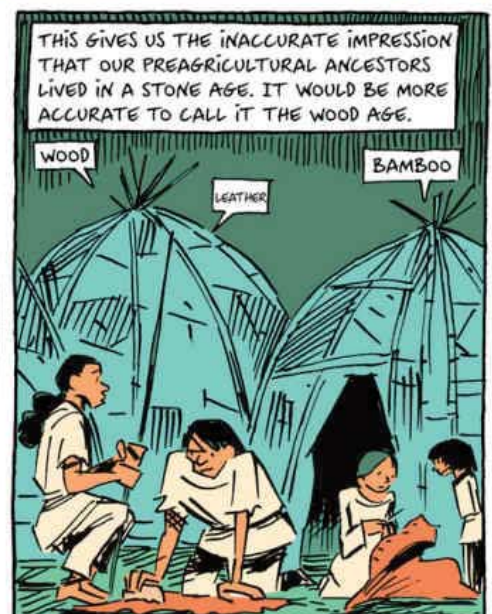
TELL ME, FATHER KLÜG, AS AN ARCHAEOLOGIST... WHAT ARCHAEOLOGICAL CLUES DO WE HAVE ABOUT DAILY LIFE IN THE STONE AGE?

WHEN WE DISCUSS ANCIENT FAMILY STRUCTURES, PEOPLE OFTEN GET VERY... UM, SENSITIVE, YOU COULD EVEN SAY IRATE...

THE TRUTH IS, THE WHOLE DEBATE IS BASED ON VERY FEW CLUES...

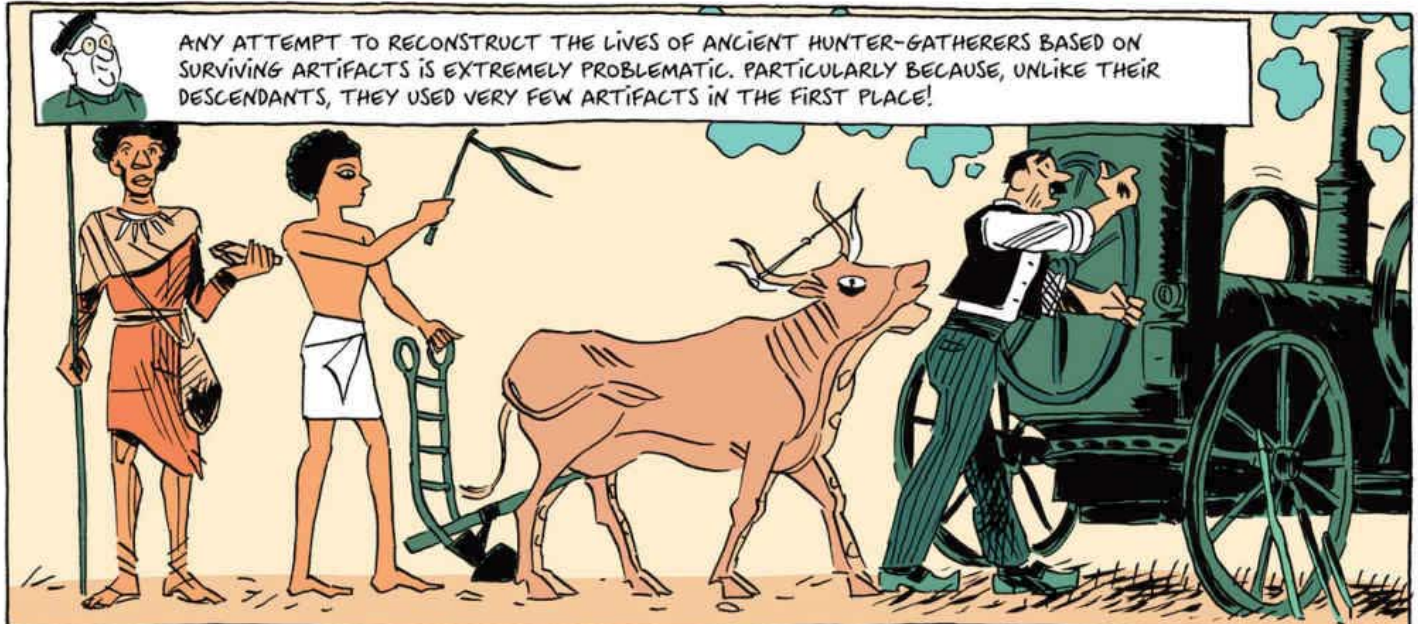


MOST OF THE EVIDENCE WE HAVE IS FOSSILIZED BONES AND STONE TOOLS.



THIS GIVES US THE INACCURATE IMPRESSION THAT OUR PREAGRICULTURAL ANCESTORS LIVED IN A STONE AGE. IT WOULD BE MORE ACCURATE TO CALL IT THE WOOD AGE.

WOOD LEATHER BAMBOO



ANY ATTEMPT TO RECONSTRUCT THE LIVES OF ANCIENT HUNTER-GATHERERS BASED ON SURVIVING ARTIFACTS IS EXTREMELY PROBLEMATIC. PARTICULARLY BECAUSE, UNLIKE THEIR DESCENDANTS, THEY USED VERY FEW ARTIFACTS IN THE FIRST PLACE!

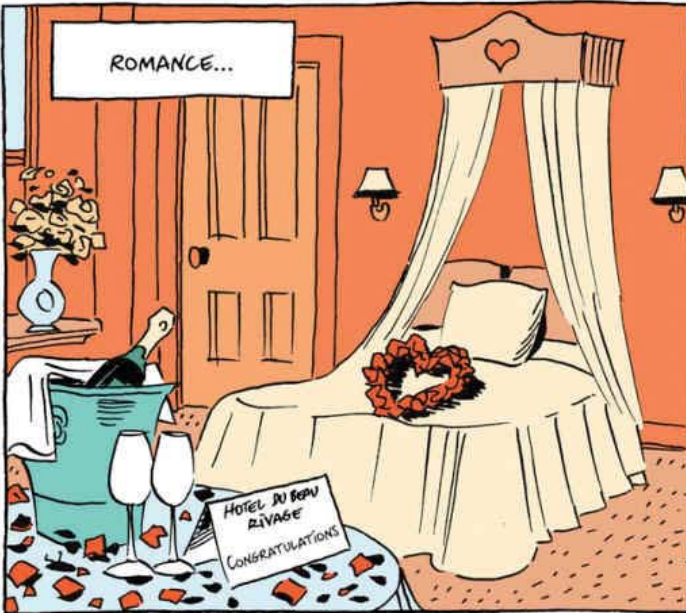
NOWADAYS, A TYPICAL MEMBER OF OUR AFFLUENT SOCIETY WILL USE SEVERAL MILLION ARTIFACTS OVER THE COURSE OF HIS OR HER LIFE. THIS COULD BE FOR EATING...



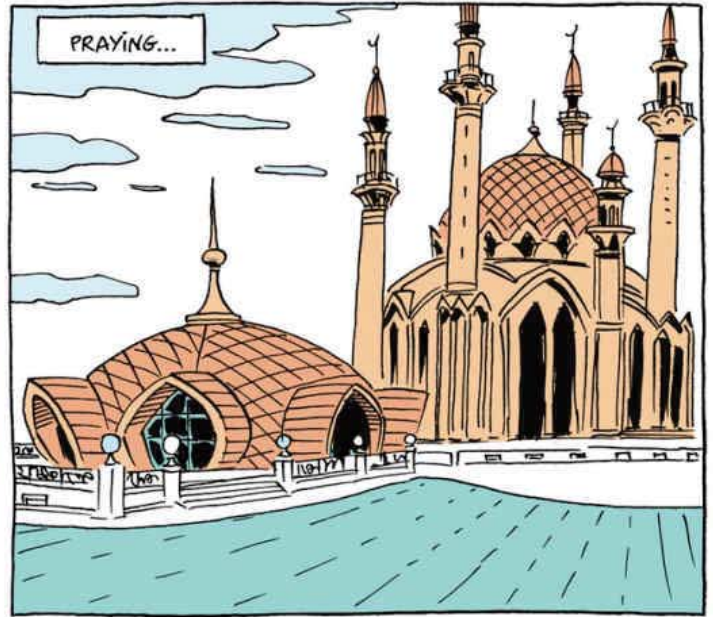
PLAYING...



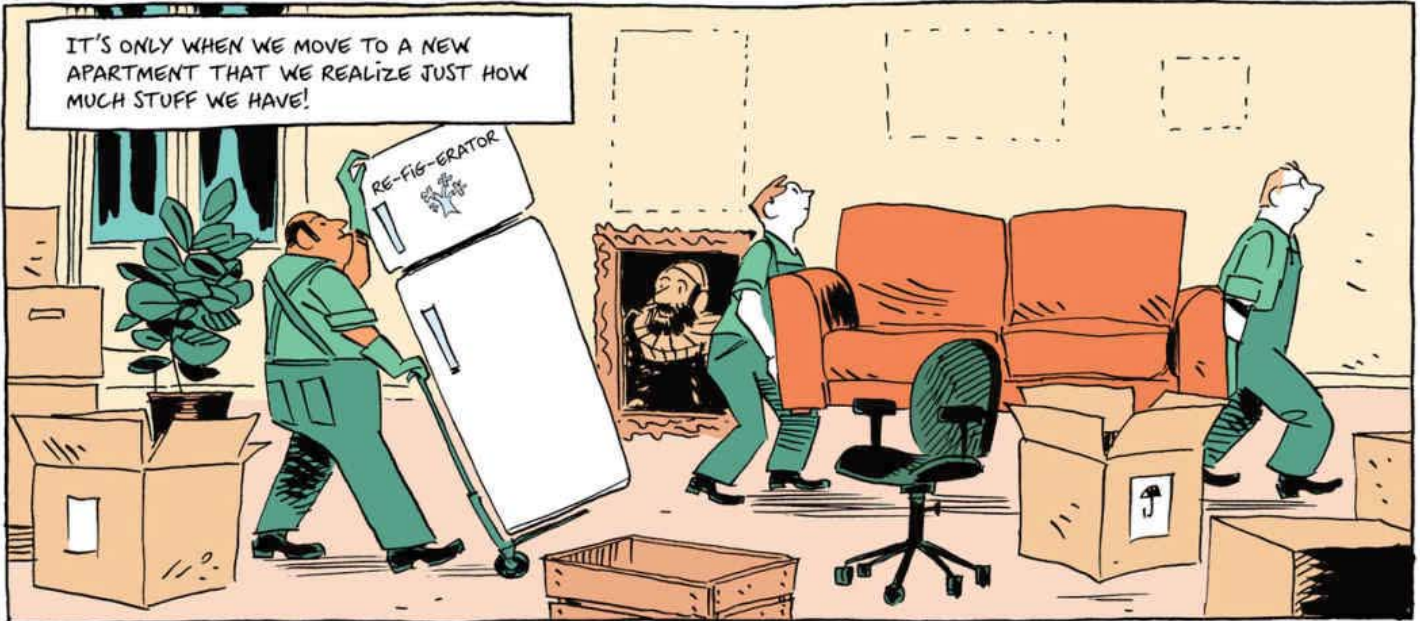
ROMANCE...

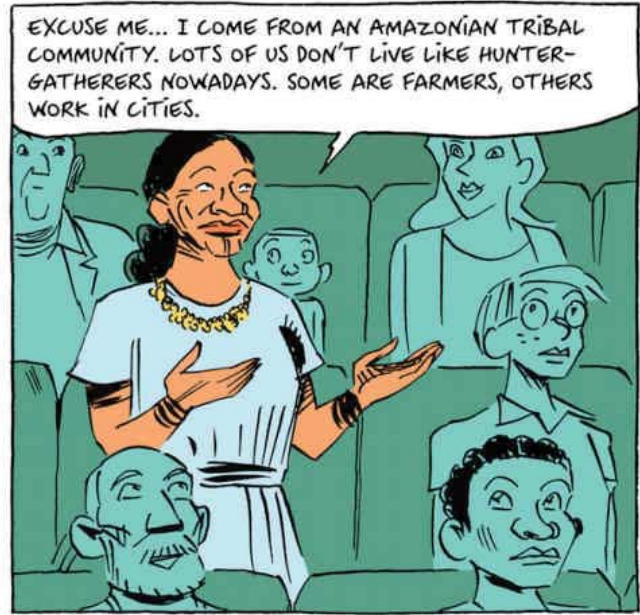
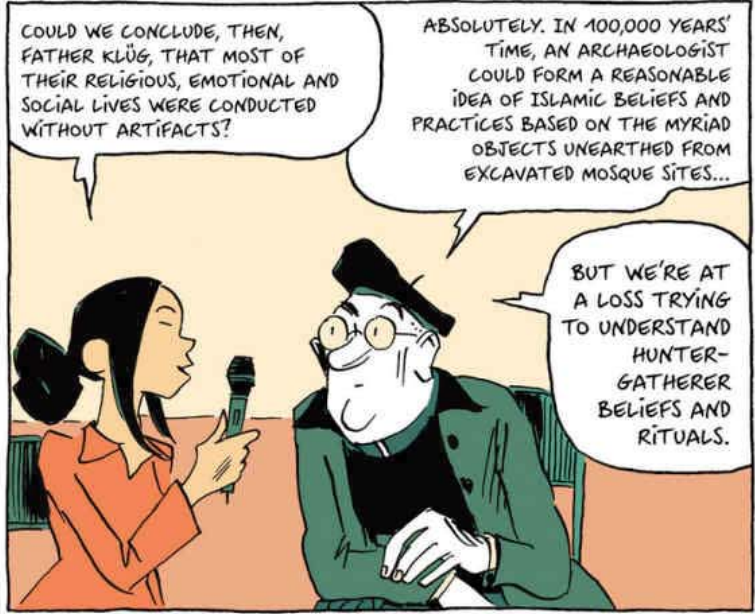
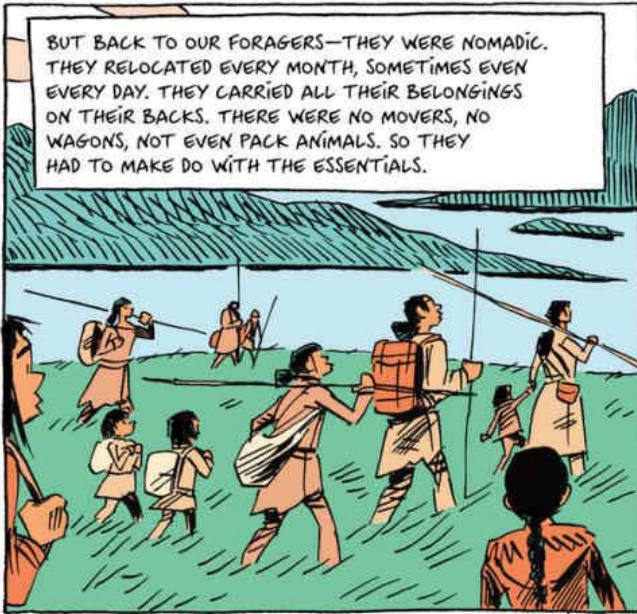


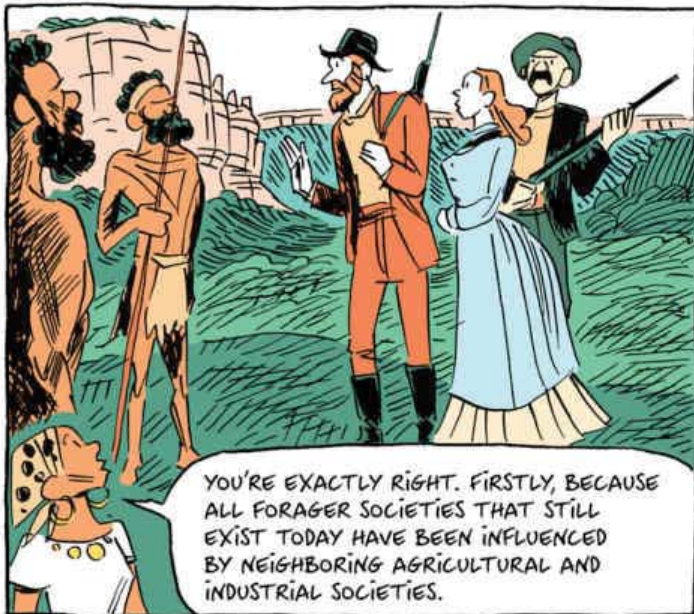
PRAYING...



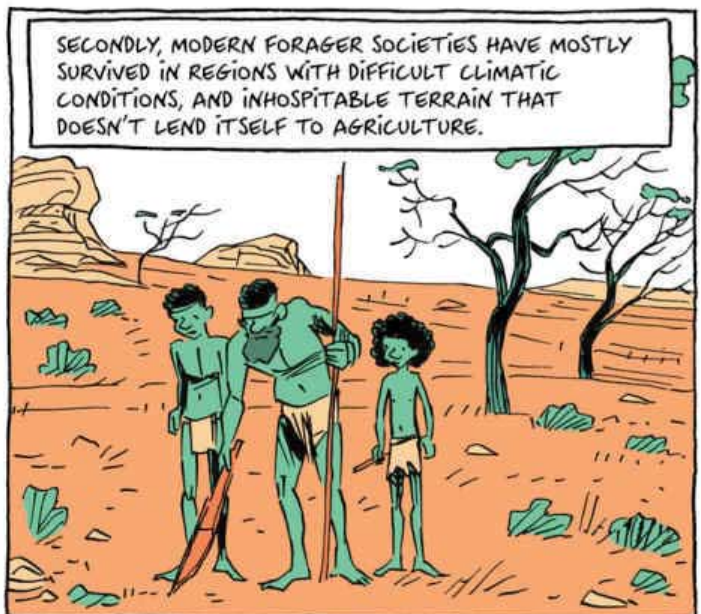
IT'S ONLY WHEN WE MOVE TO A NEW APARTMENT THAT WE REALIZE JUST HOW MUCH STUFF WE HAVE!







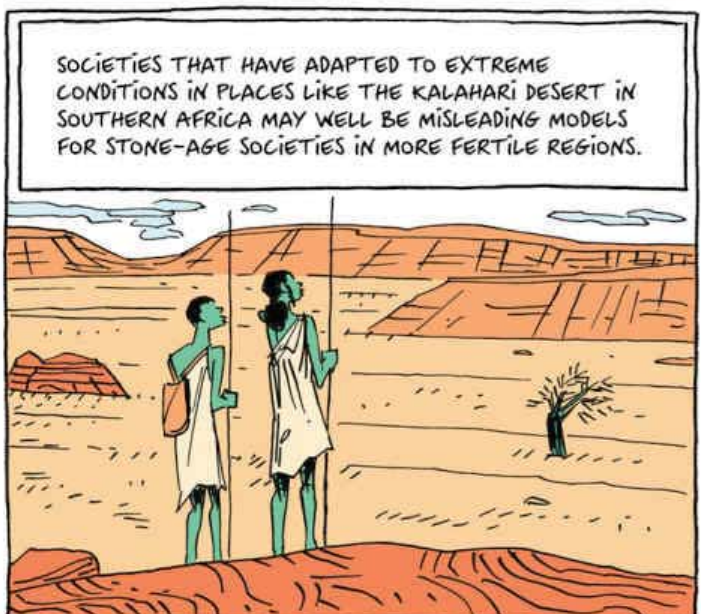
YOU'RE EXACTLY RIGHT. FIRSTLY, BECAUSE ALL FORAGER SOCIETIES THAT STILL EXIST TODAY HAVE BEEN INFLUENCED BY NEIGHBORING AGRICULTURAL AND INDUSTRIAL SOCIETIES.



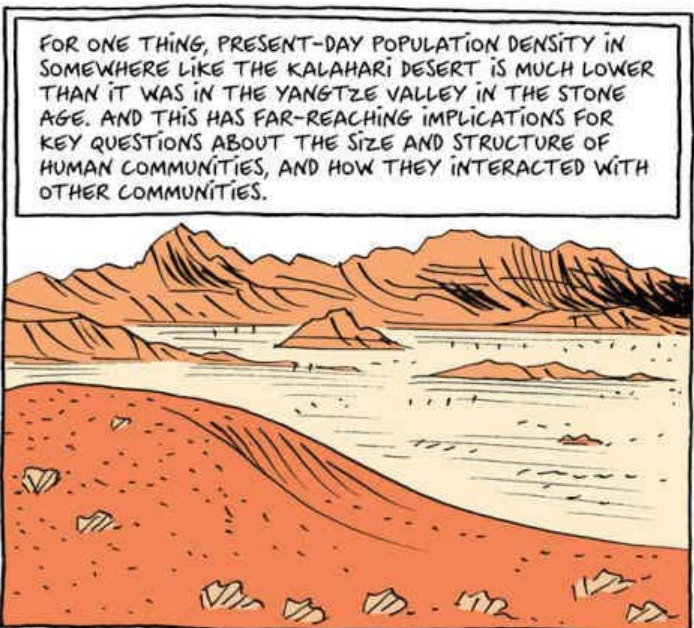
SECONDLY, MODERN FORAGER SOCIETIES HAVE MOSTLY SURVIVED IN REGIONS WITH DIFFICULT CLIMATIC CONDITIONS, AND INHOSPITABLE TERRAIN THAT DOESN'T LEND ITSELF TO AGRICULTURE.



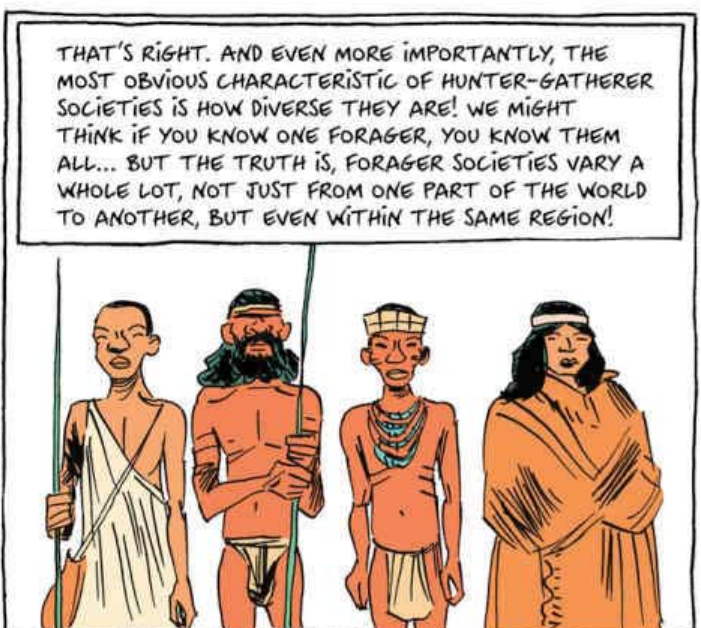
AS AN EXAMPLE, WE TEND TO ASSOCIATE AUSTRALIA'S ABORIGINE FORAGERS WITH A DESERT ENVIRONMENT. BUT WHEN EUROPEANS FIRST ARRIVED, MOST ABORIGINES LIVED IN FERTILE LAND AROUND WHAT'S NOW SYDNEY AND MELBOURNE.



SOCIETIES THAT HAVE ADAPTED TO EXTREME CONDITIONS IN PLACES LIKE THE KALAHARI DESERT IN SOUTHERN AFRICA MAY WELL BE MISLEADING MODELS FOR STONE-AGE SOCIETIES IN MORE FERTILE REGIONS.

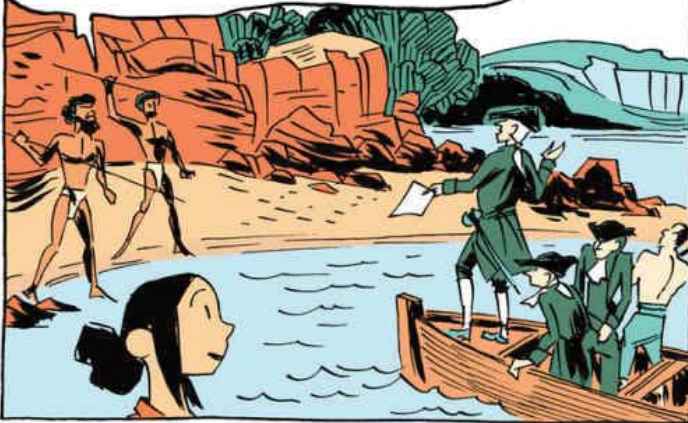


FOR ONE THING, PRESENT-DAY POPULATION DENSITY IN SOMEWHERE LIKE THE KALAHARI DESERT IS MUCH LOWER THAN IT WAS IN THE YANGTZE VALLEY IN THE STONE AGE. AND THIS HAS FAR-REACHING IMPLICATIONS FOR KEY QUESTIONS ABOUT THE SIZE AND STRUCTURE OF HUMAN COMMUNITIES, AND HOW THEY INTERACTED WITH OTHER COMMUNITIES.



THAT'S RIGHT. AND EVEN MORE IMPORTANTLY, THE MOST OBVIOUS CHARACTERISTIC OF HUNTER-GATHERER SOCIETIES IS HOW DIVERSE THEY ARE! WE MIGHT THINK IF YOU KNOW ONE FORAGER, YOU KNOW THEM ALL... BUT THE TRUTH IS, FORAGER SOCIETIES VARY A WHOLE LOT, NOT JUST FROM ONE PART OF THE WORLD TO ANOTHER, BUT EVEN WITHIN THE SAME REGION!

THE AMAZING VARIETY THAT THE FIRST EUROPEAN COLONIZERS FOUND AMONG ABORIGINAL PEOPLES IN AUSTRALIA IS A GREAT EXAMPLE. JUST BEFORE THE BRITISH CONQUEST, THERE WERE BETWEEN 300,000 AND 700,000 HUNTER-GATHERERS LIVING ON THE CONTINENT IN 200 TO 600 TRIBES. AND EACH TRIBE WAS MADE UP OF SEVERAL SMALLER BANDS.



EACH TRIBE HAD ITS OWN LANGUAGE, NORMS AND CUSTOMS, WHICH COULD BE VERY DIFFERENT FROM THOSE IN THE NEIGHBORING TRIBE. AROUND WHAT IS NOW ADELAIDE IN SOUTHERN AUSTRALIA, THERE WERE SEVERAL WHAT WE CALL "PATRILINEAL CLANS." THAT MEANS THEY ESTABLISHED DESCENT FROM THE FATHER'S SIDE. THEIR CLANS BONDED INTO STRICTLY TERRITORIAL TRIBES.



MEANWHILE, SOME TRIBES IN NORTHERN AUSTRALIA FOCUSED MORE ON AN INDIVIDUAL'S MATERNAL LINE OF DESCENT, AND PEOPLE'S TRIBAL IDENTITY DEPENDED ON THEIR TOTEM RATHER THAN THEIR TERRITORY.



IT STANDS TO REASON, THEN, THAT THERE WAS EQUALLY IMPRESSIVE ETHNIC AND CULTURAL DIVERSITY AMONG ANCIENT HUNTER-GATHERERS, AND THE FIVE TO EIGHT MILLION FORAGERS WHO WALKED THE EARTH JUST BEFORE THE AGRICULTURAL REVOLUTION WERE DIVIDED INTO THOUSANDS OF SEPARATE TRIBES, WITH THOUSANDS OF DIFFERENT LANGUAGES AND CULTURES.

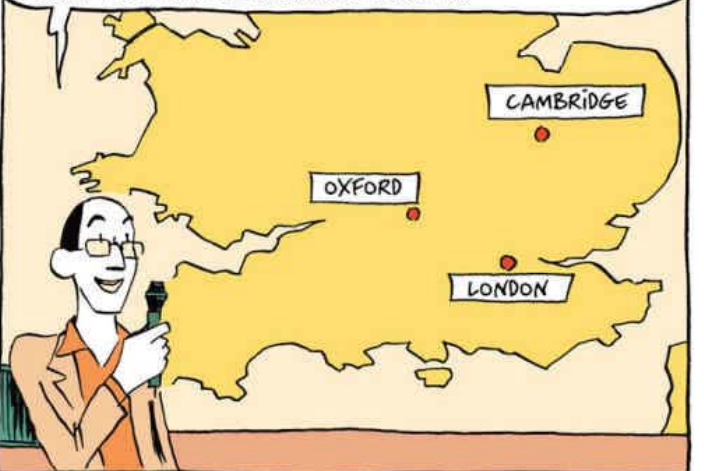


IN FACT, SURELY THAT'S ONE OF THE MAIN LEGACIES OF THE COGNITIVE REVOLUTION. WOULD YOU AGREE, YUVAL?



VERY MUCH SO! THANKS TO THEIR CAPACITY FOR FICTION, EVEN POPULATIONS WITH THE SAME GENETIC MAKE-UP WHO LIVED UNDER SIMILAR ECOLOGICAL CONDITIONS COULD CREATE VERY DIFFERENT IMAGINED REALITIES, THEREFORE ESTABLISHING DIFFERENT NORMS AND VALUES.

FOR EXAMPLE, WE HAVE EVERY REASON TO BELIEVE THAT A FORAGER BAND LIVING 30,000 YEARS AGO ON THE SPOT WHERE OXFORD UNIVERSITY NOW STANDS WOULD NOT HAVE SPOKEN THE SAME LANGUAGE AS ONE LIVING WHERE WE WOULD NOW FIND CAMBRIDGE UNIVERSITY.



OXFORD



CAMBRIDGE

THESE BANDS COULD HAVE BEEN COMPLETELY DIFFERENT SOCIALLY AND POLITICALLY...



IN THEIR FAMILY MAKE-UP...



THEIR TABOOS...



AND, OF COURSE, IN THEIR RELIGIOUS BELIEFS.



IN OTHER WORDS, ANTHROPOLOGICAL OBSERVATIONS OF MODERN FORAGERS CAN HELP US UNDERSTAND SOME OPTIONS THAT WERE OPEN TO ANCIENT FORAGERS, BUT THE HORIZON OF POSSIBILITIES WAS MUCH WIDER THEN... AND SADLY, WE CAN'T SEE THAT MUCH OF IT NOW.

HEATED DEBATES ABOUT HOMO SAPIENS' "NATURAL WAY OF LIFE" ARE MISSING THE MAIN POINT.

EVER SINCE THE COGNITIVE REVOLUTION, THERE HASN'T BEEN JUST ONE NATURAL WAY OF LIFE FOR SAPIENS. INSTEAD, THERE ARE CULTURAL CHOICES TAKEN FROM A BEWILDERING SELECTION OF OPTIONS.



THANK YOU VERY MUCH, YUVAL. NOW, BEFORE WE BRING THIS VERY INTERESTING DISCUSSION TO A CLOSE, WE HAVE A SHORT FILM ABOUT SOME OF THE THINGS THAT WE KNOW ABOUT ANCIENT FORAGERS.

LIGHTS, PLEASE.



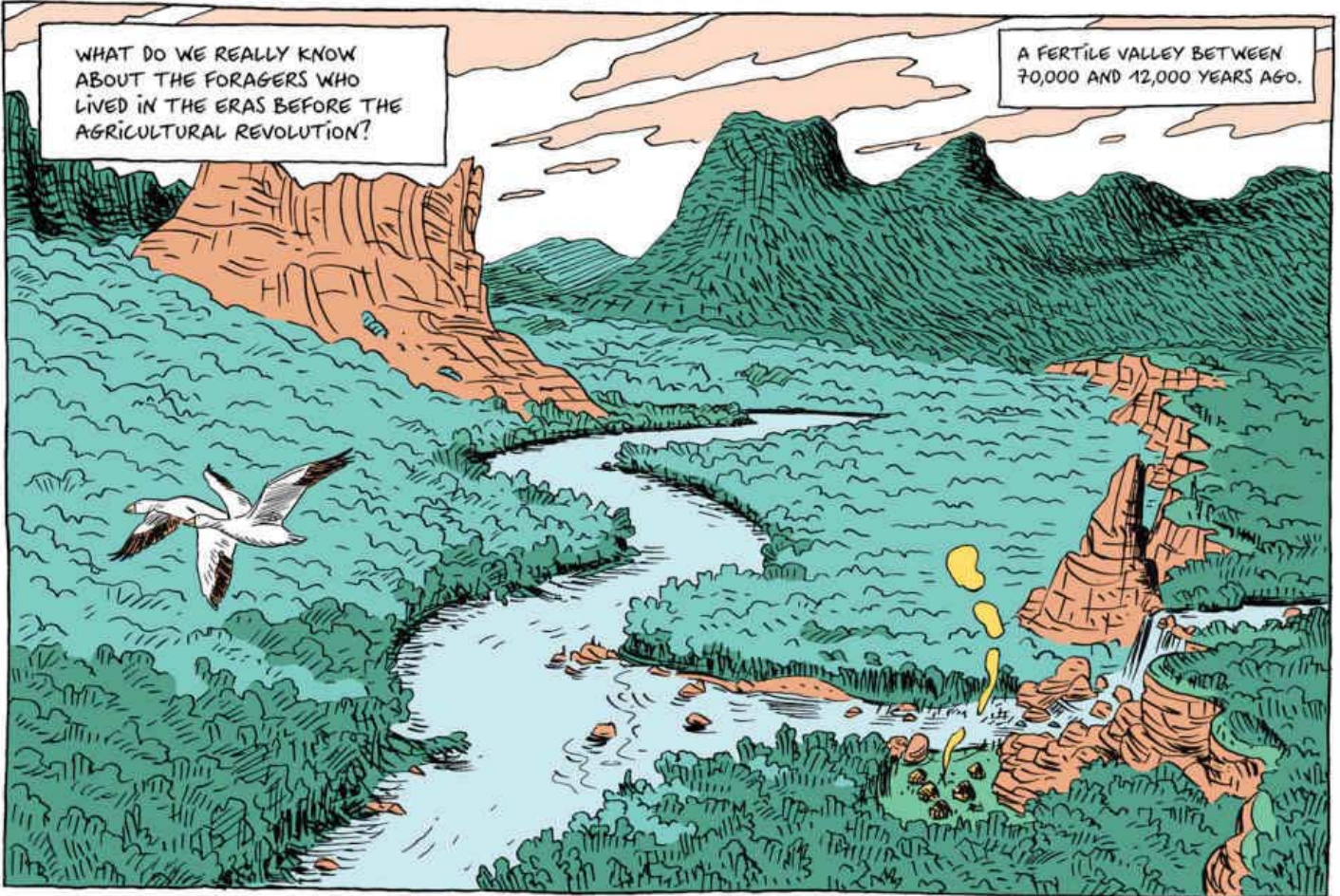
COUGH!

COUGH!

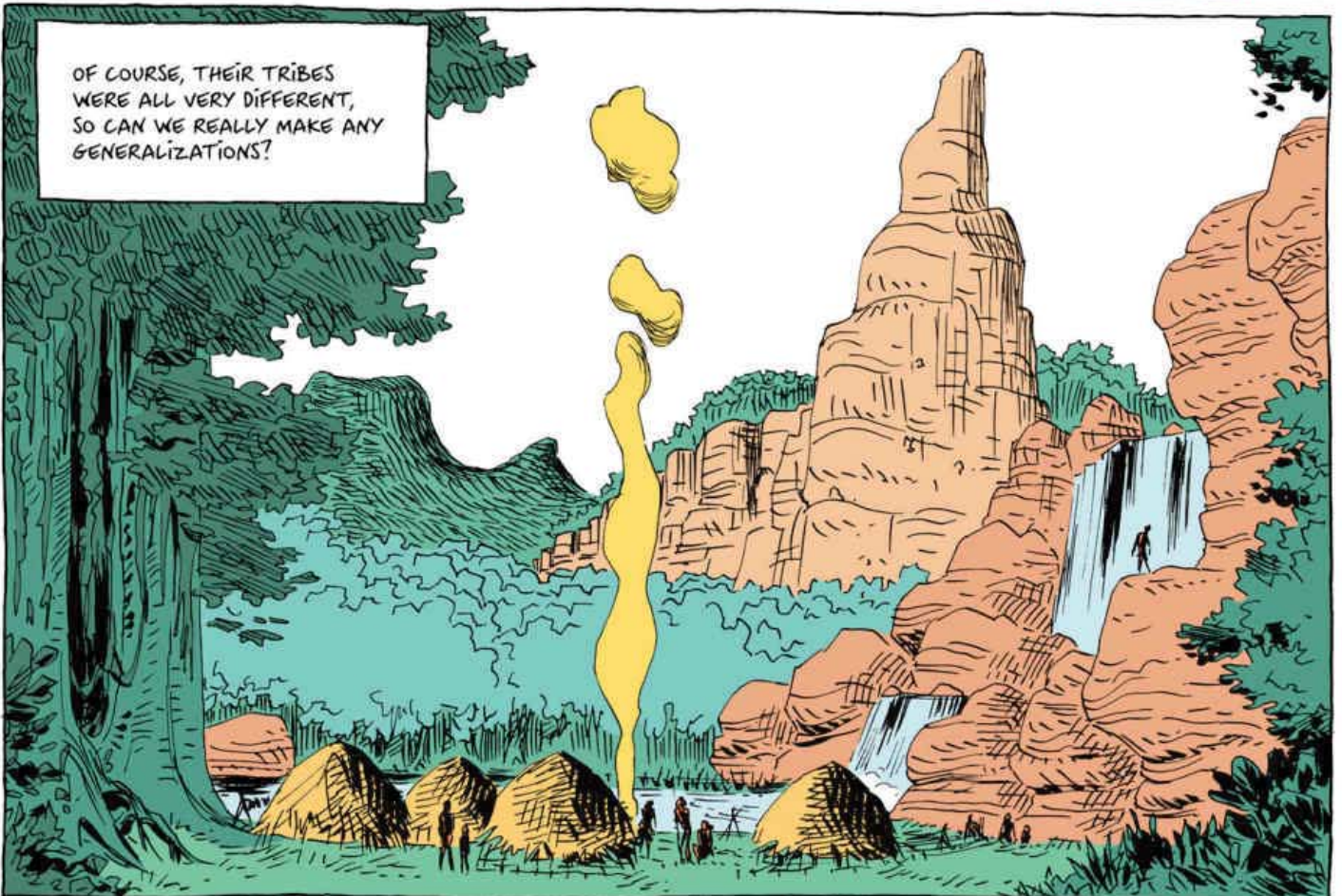


WHAT DO WE REALLY KNOW ABOUT THE FORAGERS WHO LIVED IN THE ERAS BEFORE THE AGRICULTURAL REVOLUTION?

A FERTILE VALLEY BETWEEN 70,000 AND 12,000 YEARS AGO.



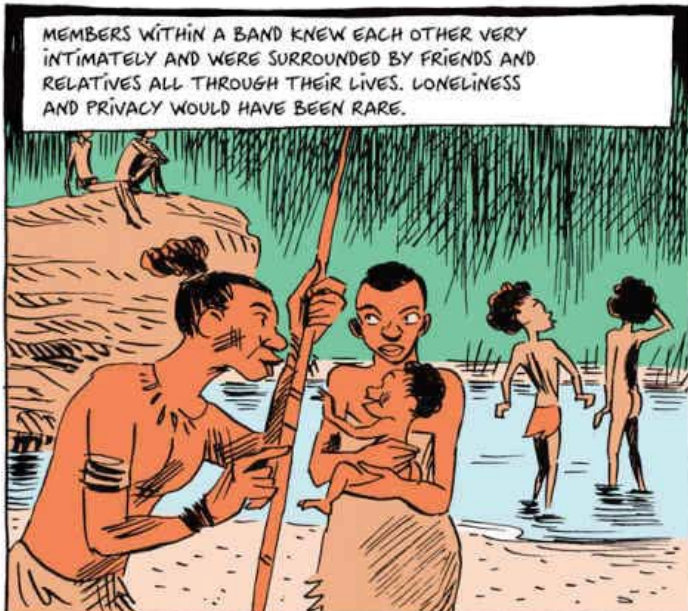
OF COURSE, THEIR TRIBES WERE ALL VERY DIFFERENT, SO CAN WE REALLY MAKE ANY GENERALIZATIONS?



IT SEEMS SAFE TO SAY THAT THE VAST MAJORITY OF PEOPLE LIVED IN SMALL BANDS OF SEVERAL DOZEN OR AT MOST A FEW HUNDRED INDIVIDUALS.



MEMBERS WITHIN A BAND KNEW EACH OTHER VERY INTIMATELY AND WERE SURROUNDED BY FRIENDS AND RELATIVES ALL THROUGH THEIR LIVES. LONELINESS AND PRIVACY WOULD HAVE BEEN RARE.



NEIGHBORING BANDS PROBABLY COMPETED FOR RESOURCES AND OCCASIONALLY MIGHT EVEN HAVE FOUGHT ONE ANOTHER.



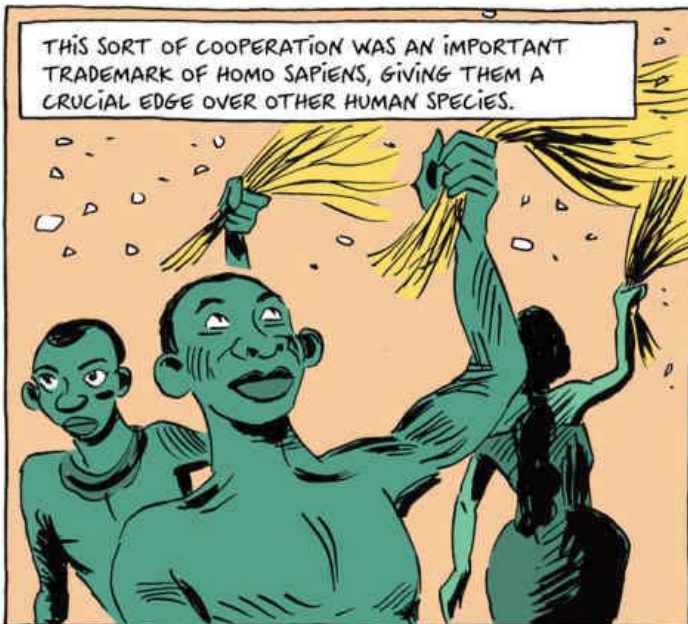
BUT THEY WOULD HAVE HAD FRIENDLY CONTACT TOO. THEY EXCHANGED MEMBERS, SHARED INFORMATION, HUNTED TOGETHER AND TRADED RARE LUXURIES SUCH AS SEASHELLS.



SOME NEIGHBORING BANDS SOMETIMES JOINED FORCES AGAINST FOREIGNERS.



THIS SORT OF COOPERATION WAS AN IMPORTANT TRADEMARK OF HOMO SAPIENS, GIVING THEM A CRUCIAL EDGE OVER OTHER HUMAN SPECIES.



SOMETIMES RELATIONS WITH NEIGHBORING BANDS WERE TIGHT ENOUGH FOR ALL OF THEM TO CONSTITUTE A SINGLE TRIBE WITH A COMMON LANGUAGE, COMMON MYTHS AND COMMON NORMS AND VALUES. A TRIBE LIKE THIS MIGHT HAVE NUMBERED SEVERAL THOUSAND SAPIENS.



BUT WE MUST BE CAREFUL NOT TO OVERESTIMATE THE IMPORTANCE OF SUCH EXTERNAL RELATIONS. TRIBES CAME TOGETHER ONLY RARELY, SAY FOR SOME ANNUAL FESTIVAL. MOST OF THE TIME, SMALL BANDS LIVED THEIR LIVES IN COMPLETE ISOLATION AND PERFECTLY INDEPENDENTLY.



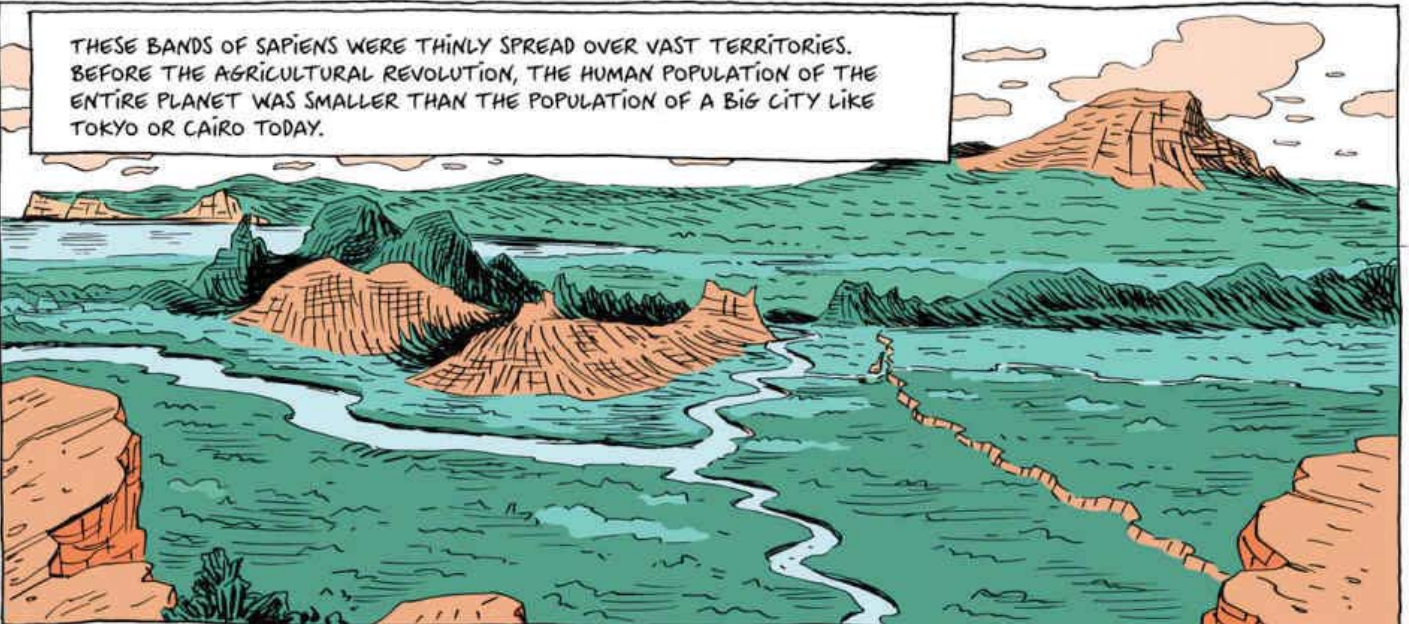
THE TRIBE WAS NOT A PERMANENT POLITICAL FRAMEWORK, AND EVEN IF IT HAD SEASONAL MEETING PLACES, THERE WERE NO PERMANENT TOWNS OR INSTITUTIONS.



THE AVERAGE PERSON COULD GO MANY MONTHS WITHOUT SEEING OR HEARING A HUMAN FROM ANOTHER BAND, AND MIGHT SEE NO MORE THAN A FEW THOUSAND HUMANS IN A LIFETIME.



THESE BANDS OF SAPIENS WERE THINLY SPREAD OVER VAST TERRITORIES. BEFORE THE AGRICULTURAL REVOLUTION, THE HUMAN POPULATION OF THE ENTIRE PLANET WAS SMALLER THAN THE POPULATION OF A BIG CITY LIKE TOKYO OR CAIRO TODAY.



MOST SAPIENS BANDS LIVED ON THE MOVE, ROAMING FROM PLACE TO PLACE IN SEARCH OF FOOD.



THEIR MOVEMENTS WERE INFLUENCED BY THE CHANGING SEASONS...



ANNUAL ANIMAL MIGRATIONS...



AND THE GROWTH CYCLE OF PLANTS.



BANDS USUALLY CAME AND WENT ACROSS THE SAME HOME TERRITORY—AN AREA OF BETWEEN A FEW DOZEN AND HUNDREDS OF SQUARE MILES.



BANDS WOULD VENTURE OUTSIDE THEIR TURF ONLY OCCASIONALLY TO EXPLORE NEW TERRITORIES. PERHAPS SPURRED ON BY A NATURAL DISASTER...



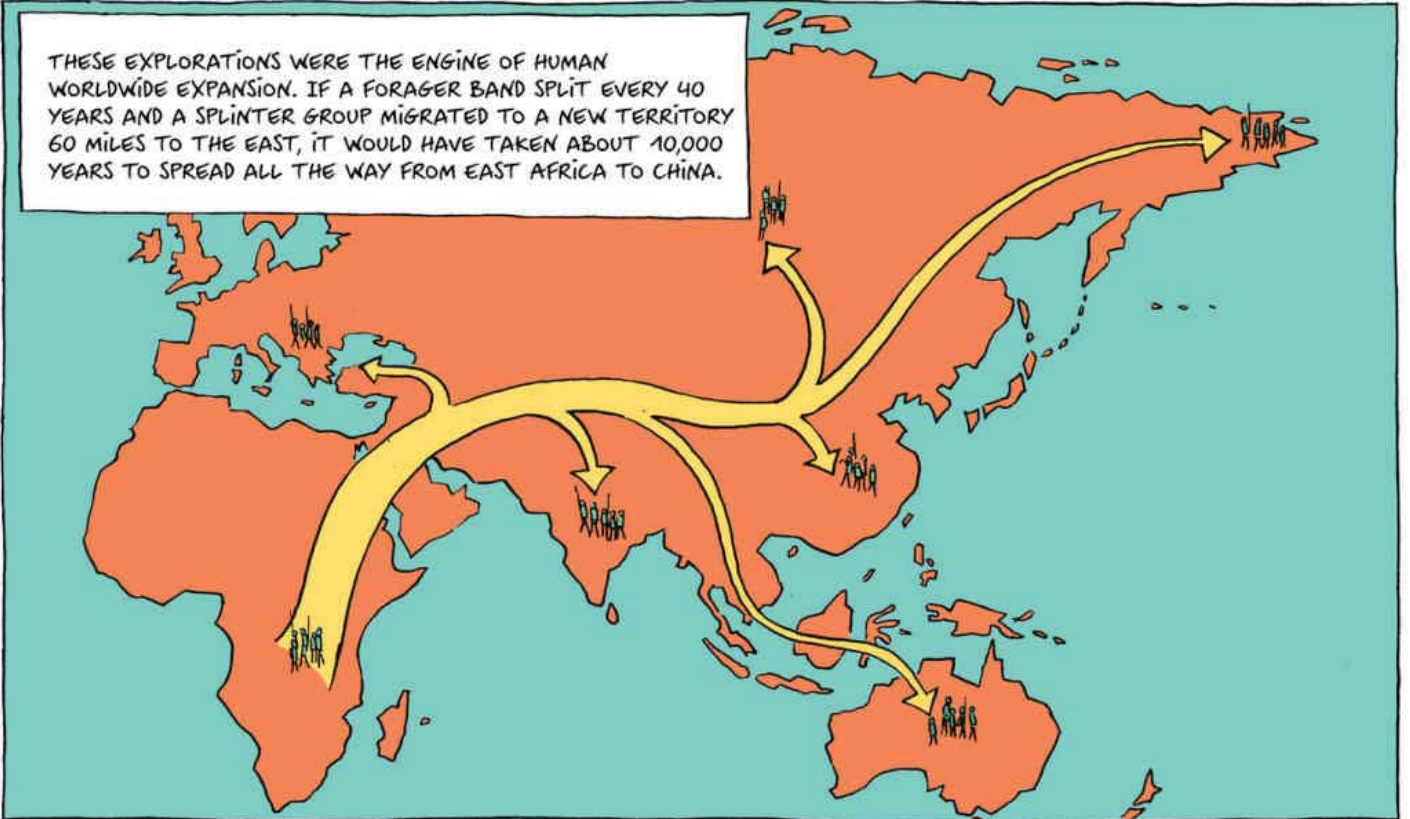
VIOLENT CONFLICT...



OR THE INITIATIVE OF A CHARISMATIC LEADER.



THESE EXPLORATIONS WERE THE ENGINE OF HUMAN WORLDWIDE EXPANSION. IF A FORAGER BAND SPLIT EVERY 40 YEARS AND A SPLINTER GROUP MIGRATED TO A NEW TERRITORY 60 MILES TO THE EAST, IT WOULD HAVE TAKEN ABOUT 10,000 YEARS TO SPREAD ALL THE WAY FROM EAST AFRICA TO CHINA.



IN SOME EXCEPTIONAL CASES WHEN FOOD WAS PARTICULARLY PLENTIFUL, BANDS SETTLED IN PERMANENT CAMPS.



TECHNIQUES FOR DRYING AND SMOKING FOOD ALSO ALLOWED THEM TO STAY IN ONE PLACE FOR LONGER PERIODS.



AND IN ARCTIC REGIONS THEY COULD PRESERVE FOOD BY FREEZING IT.



THE FIRST PERMANENT SETTLEMENTS IN HISTORY APPEARED LONG BEFORE THE AGRICULTURAL REVOLUTION, ALONG COASTS AND RIVERS RICH IN FISH, SEAFOOD AND WATERFOWL.



FISHING VILLAGES MIGHT HAVE APPEARED ON THE COASTS OF INDONESIAN ISLANDS SOME 50,000 YEARS AGO, IF NOT EARLIER.



AND THESE MAY HAVE BEEN LAUNCHPADS FOR HOMO SAPIENS' FIRST TRANSOCEANIC ENTERPRISE: COLONIZING AUSTRALIA.



IN MOST HABITATS, BANDS OF SAPIENS HAD MANY DIFFERENT SOURCES OF FOOD. THEY SCROUNGED FOR TERMITES...



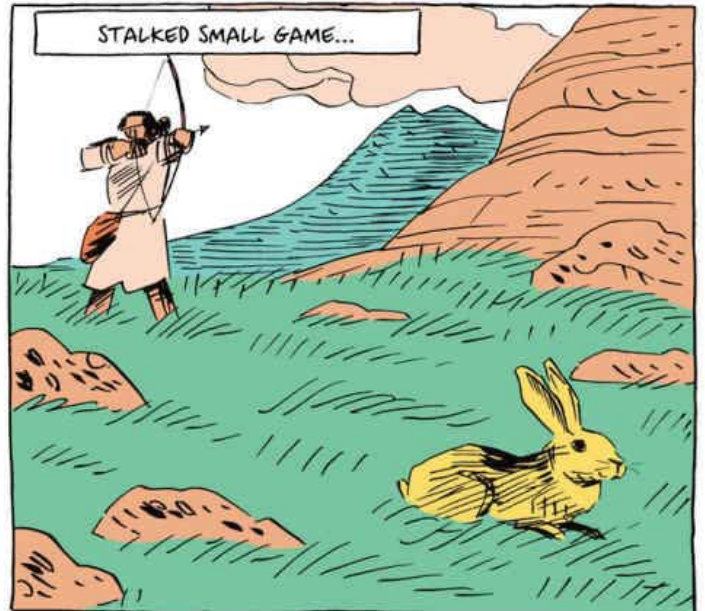
PICKED BERRIES...



DUG FOR ROOTS...



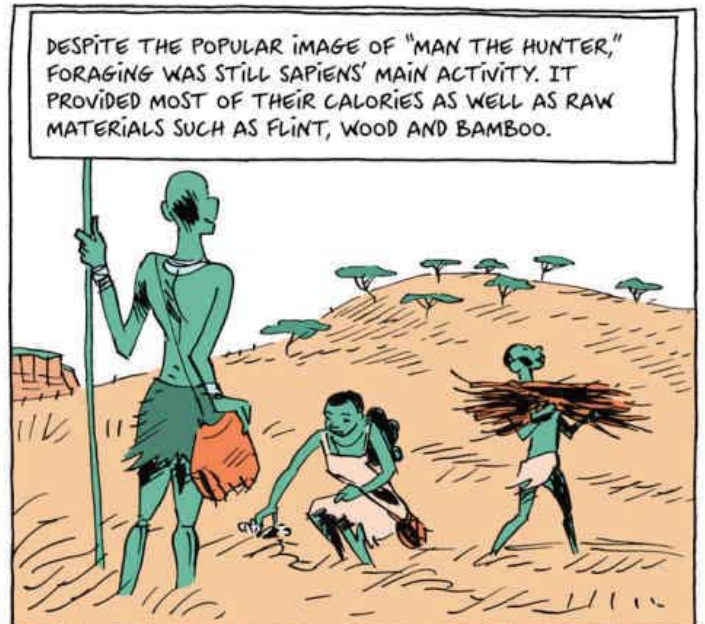
STALKED SMALL GAME...



AND HUNTED LARGER GAME.



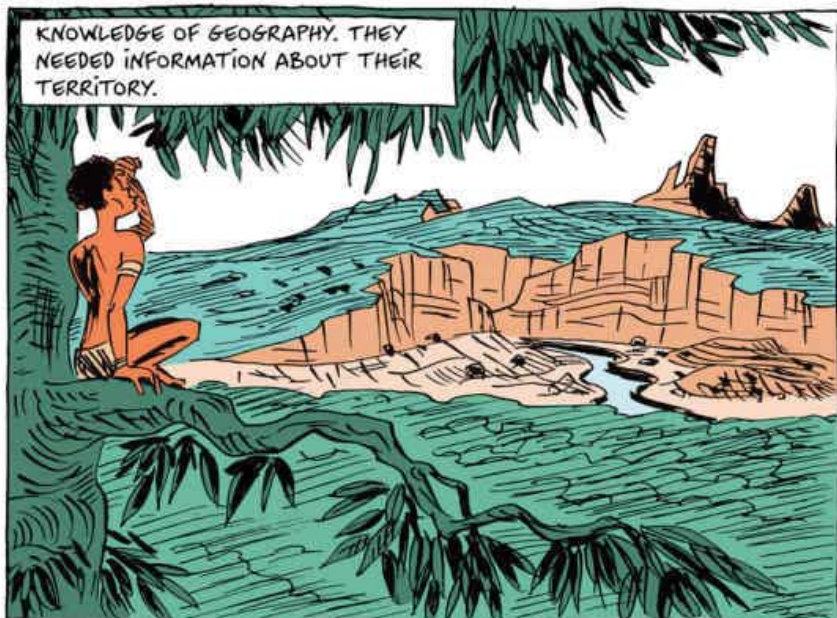
DESPITE THE POPULAR IMAGE OF "MAN THE HUNTER," FORAGING WAS STILL SAPIENS' MAIN ACTIVITY. IT PROVIDED MOST OF THEIR CALORIES AS WELL AS RAW MATERIALS SUCH AS FLINT, WOOD AND BAMBOO.



NO MATTER HOW THEY GOT THEIR FOOD, THE MOST IMPORTANT THING ALL SAPIENS NEEDED WAS KNOWLEDGE...



KNOWLEDGE OF GEOGRAPHY. THEY NEEDED INFORMATION ABOUT THEIR TERRITORY.



KNOWLEDGE OF ANIMALS. TO HUNT, THEY NEEDED TO BE FAMILIAR WITH THE HABITS OF EVERY ANIMAL.



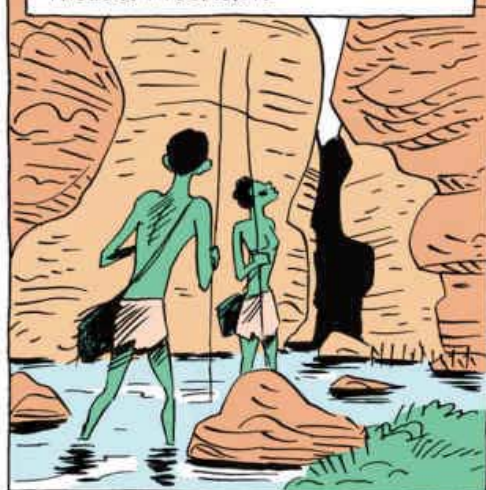
KNOWLEDGE OF PLANTS. TO FIND FOOD, THEY NEEDED TO KNOW WHERE TO FIND PLANTS, BUT ALSO WHICH FOODS WERE NOURISHING, WHICH MADE YOU SICK AND WHICH HAD HEALING PROPERTIES.



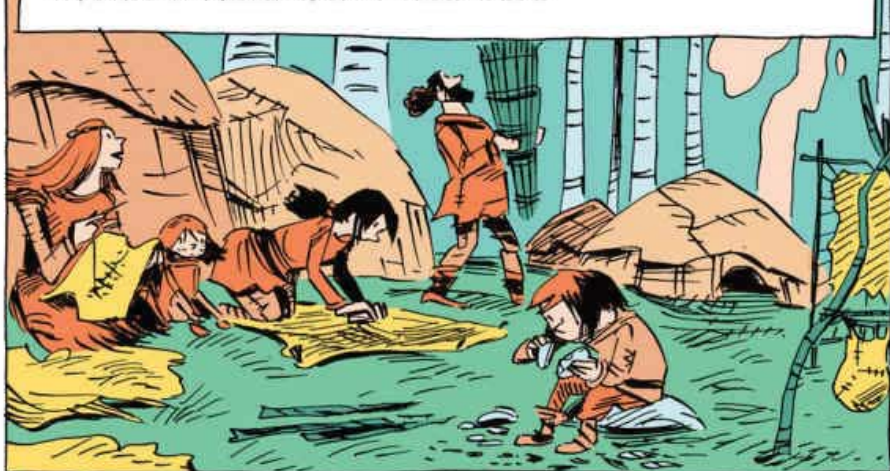
KNOWLEDGE OF THE WEATHER. THEY NEEDED TO LEARN THE CYCLE OF THE SEASONS AND KNOW HOW TO RECOGNIZE SIGNS OF AN IMPENDING THUNDERSTORM OR A DRY SPELL.



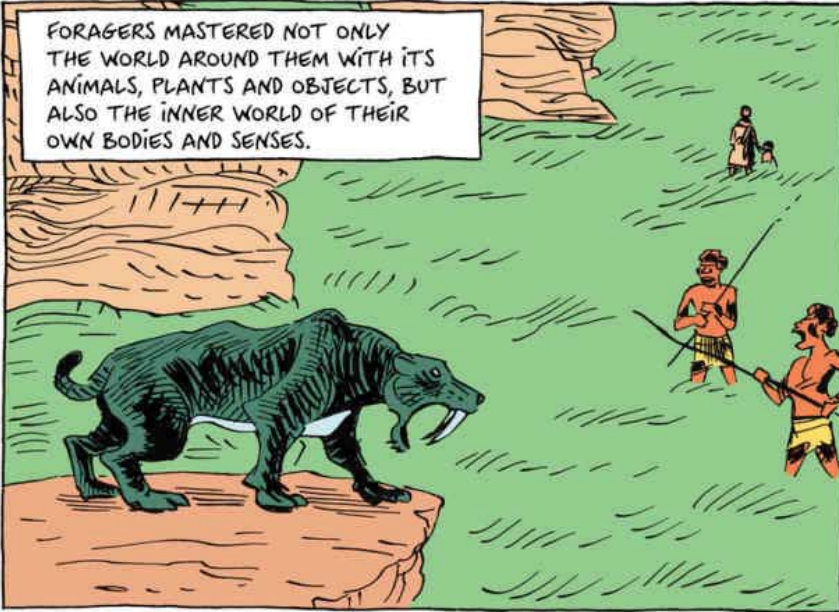
THEY STUDIED EVERY STREAM, EVERY WALNUT TREE, EVERY BEAR CAVE AND EVERY FLINT-STONE DEPOSIT NEAR THEIR SETTLEMENT.



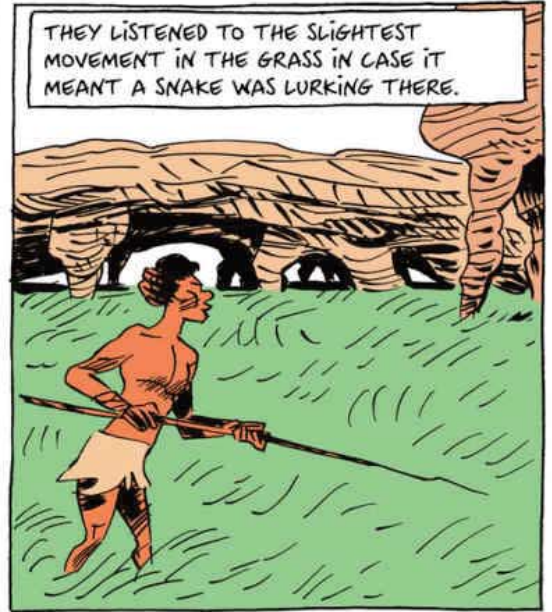
EACH INDIVIDUAL NEEDED TO KNOW HOW TO MAKE A STONE KNIFE, MEND A TORN CLOAK, SET A RABBIT TRAP AND COPE WITH AVALANCHES, SNAKEBITES AND HUNGRY LIONS. IT TOOK YEARS OF APPRENTICESHIP AND PRACTICE TO MASTER EACH OF THESE SKILLS.



FORAGERS MASTERED NOT ONLY THE WORLD AROUND THEM WITH ITS ANIMALS, PLANTS AND OBJECTS, BUT ALSO THE INNER WORLD OF THEIR OWN BODIES AND SENSES.



THEY LISTENED TO THE SLIGHTEST MOVEMENT IN THE GRASS IN CASE IT MEANT A SNAKE WAS LURKING THERE.



THEY CAREFULLY OBSERVED THE FOLIAGE OF TREES IN THE HOPES OF SPOTTING FRUIT...



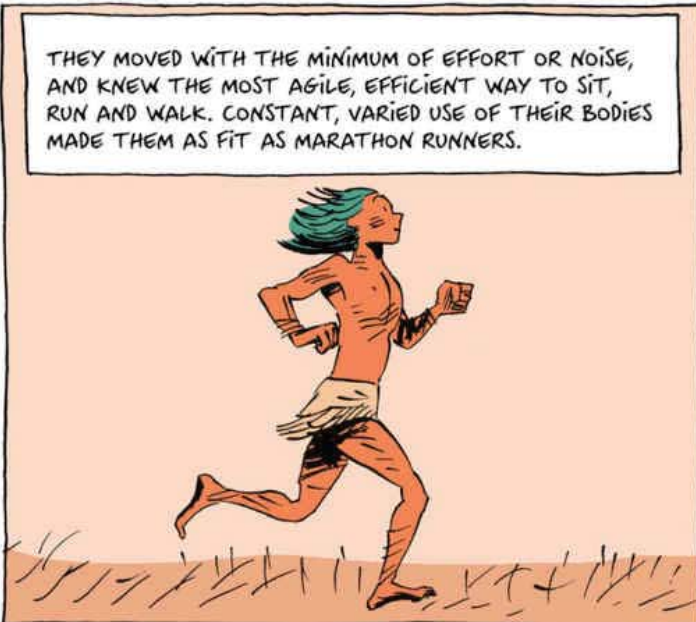
A BEEHIVE...



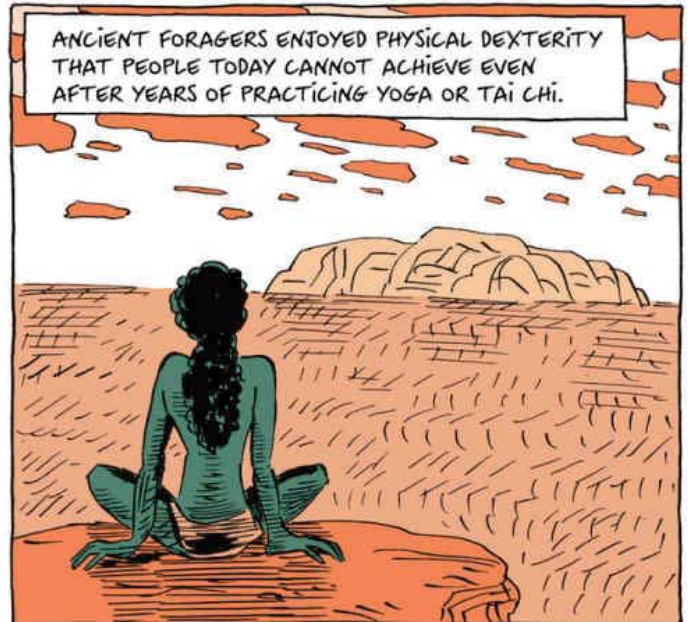
OR A BIRD'S NEST.

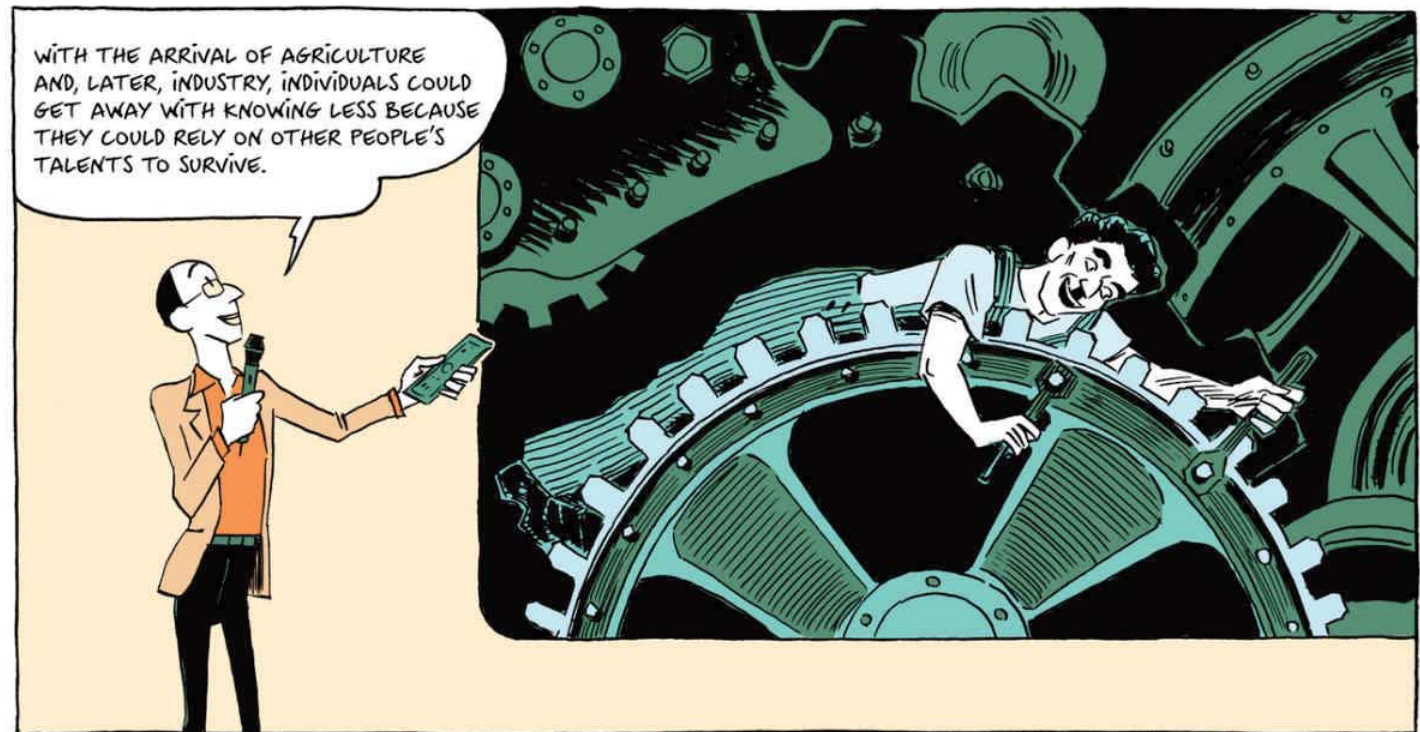
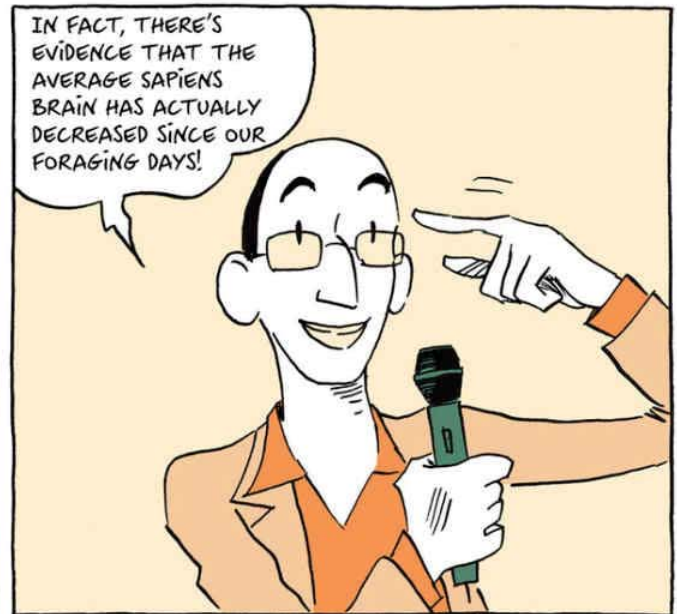
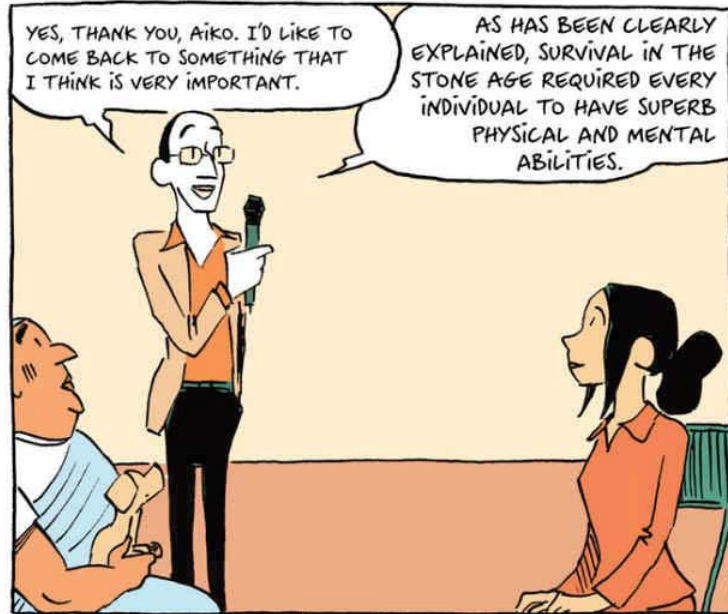
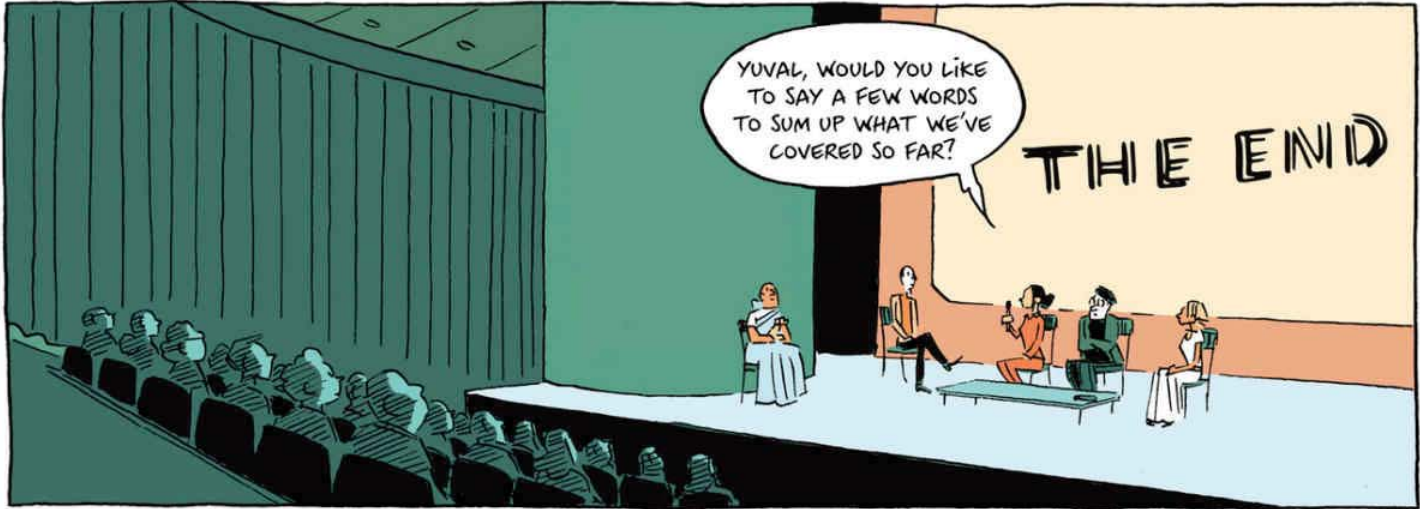


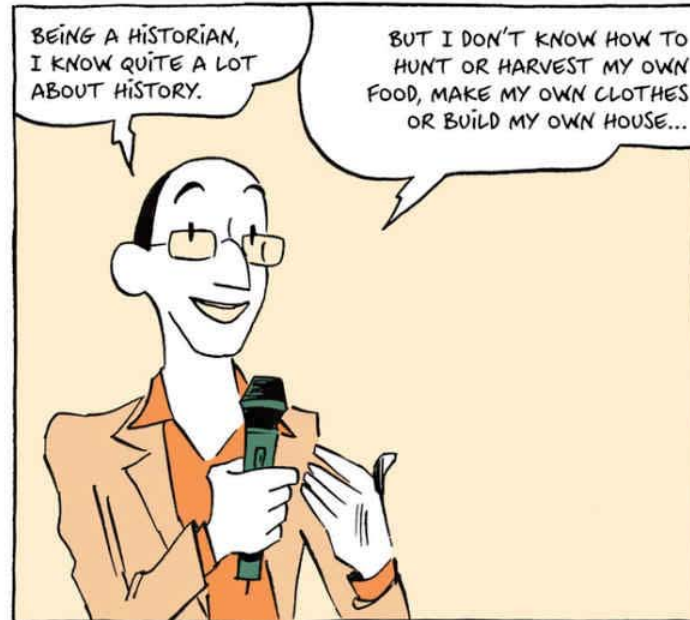
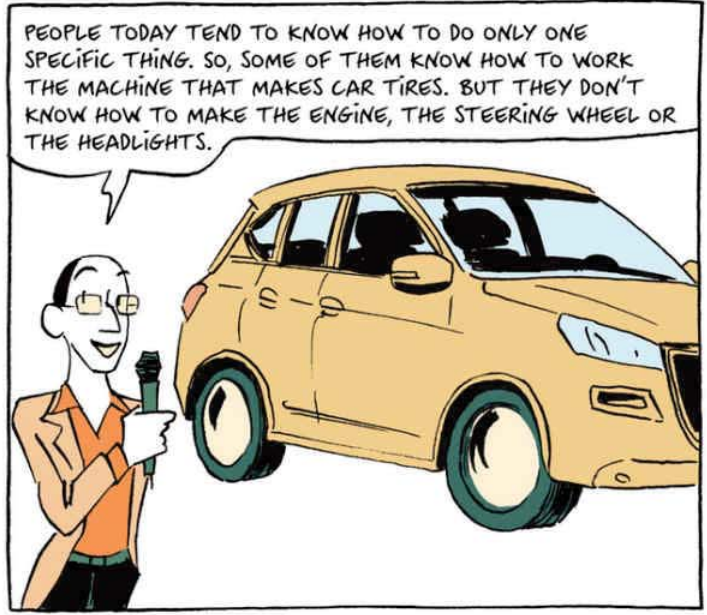
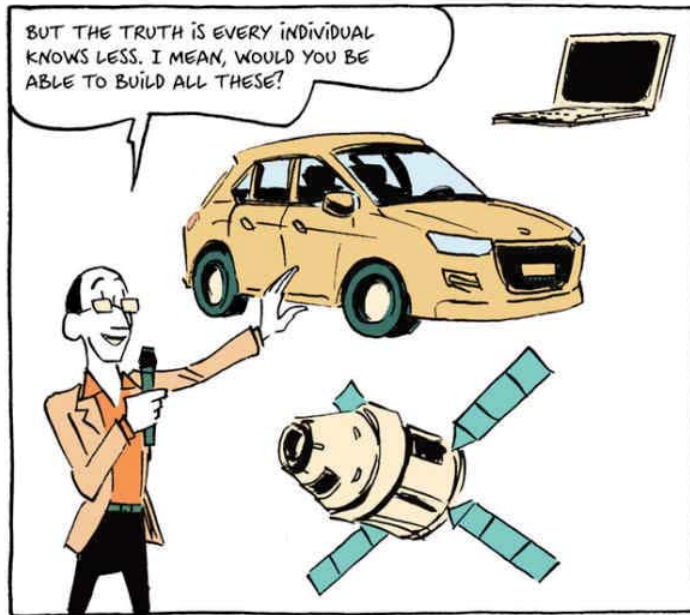
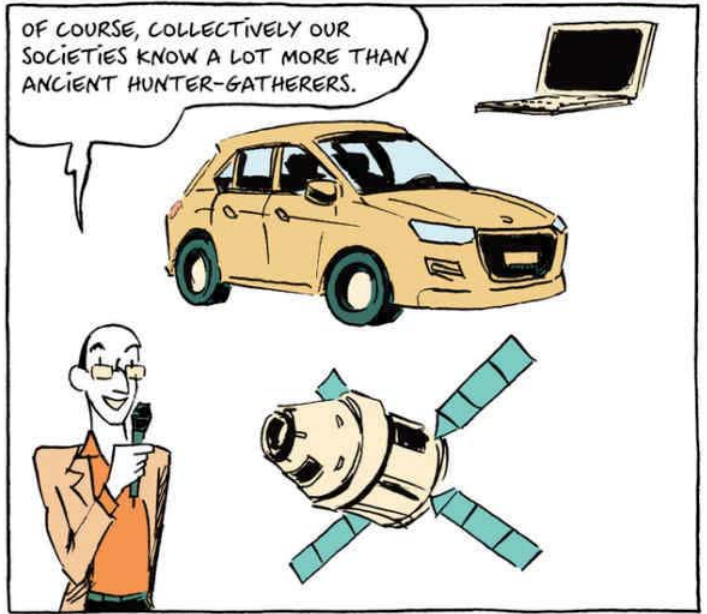
THEY MOVED WITH THE MINIMUM OF EFFORT OR NOISE, AND KNEW THE MOST AGILE, EFFICIENT WAY TO SIT, RUN AND WALK. CONSTANT, VARIED USE OF THEIR BODIES MADE THEM AS FIT AS MARATHON RUNNERS.

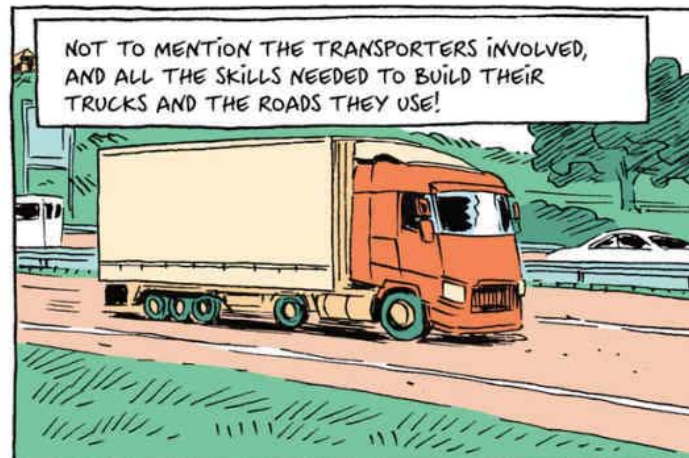
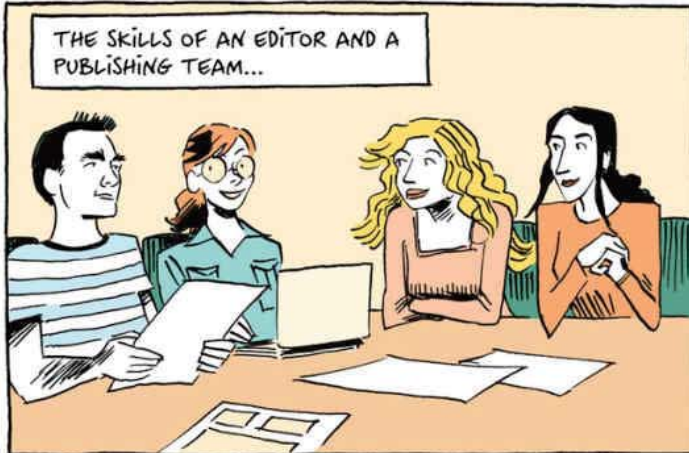
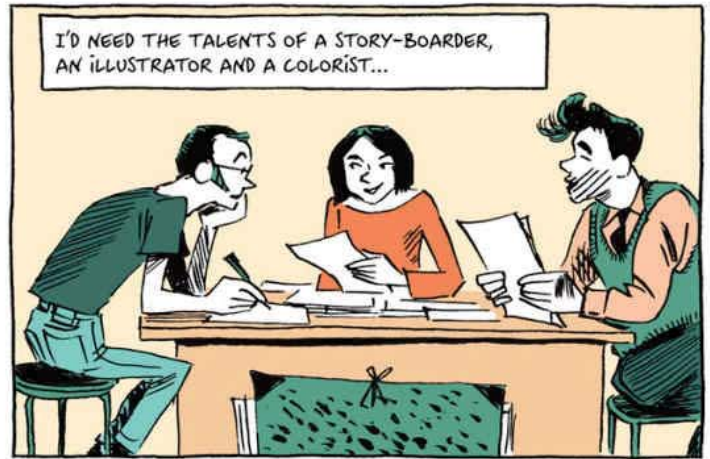
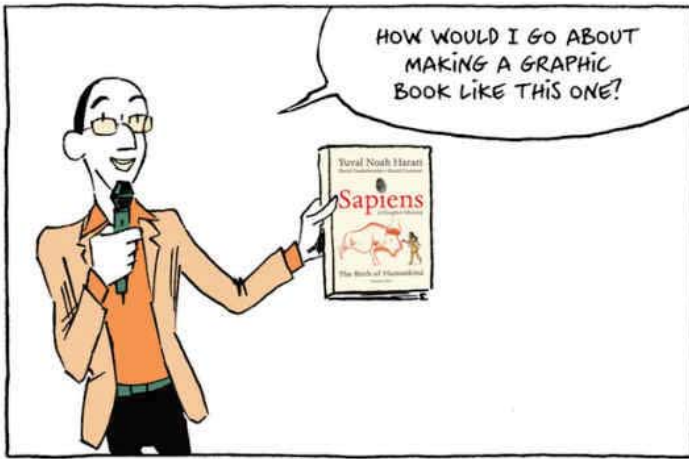



ANCIENT FORAGERS ENJOYED PHYSICAL DEXTERITY THAT PEOPLE TODAY CANNOT ACHIEVE EVEN AFTER YEARS OF PRACTICING YOGA OR TAI CHI.











I JUST WRITE BOOKS, AND PEOPLE BUY MY BOOKS...

THAT'S HOW I MAKE MONEY. THEN I GIVE SOME OF THAT MONEY TO OTHER PEOPLE SO THAT I CAN HAVE FOOD, CLOTHES AND A PLACE TO LIVE.

IF I WERE ABANDONED ON MY OWN IN THE WILD, I'D PROBABLY DIE OF HUNGER OR BE EATEN BY A TIGER... BECAUSE I HAVE NO IDEA HOW TO DO ANYTHING EXCEPT WRITE HISTORY BOOKS!



THE AVERAGE FORAGER, ON THE OTHER HAND, HAD A MUCH WIDER, DEEPER AND MORE VARIED KNOWLEDGE OF HIS OR HER IMMEDIATE ENVIRONMENT THAN I DO OF MINE. IT TOOK MY ANCESTORS JUST A FEW MINUTES TO TURN A FLINT INTO A SPEAR POINT.



I CAN'T DO THAT!



NOWADAYS, MOST PEOPLE LIVING IN INDUSTRIAL SOCIETIES DON'T NEED TO KNOW MUCH ABOUT THE NATURAL WORLD TO SURVIVE.

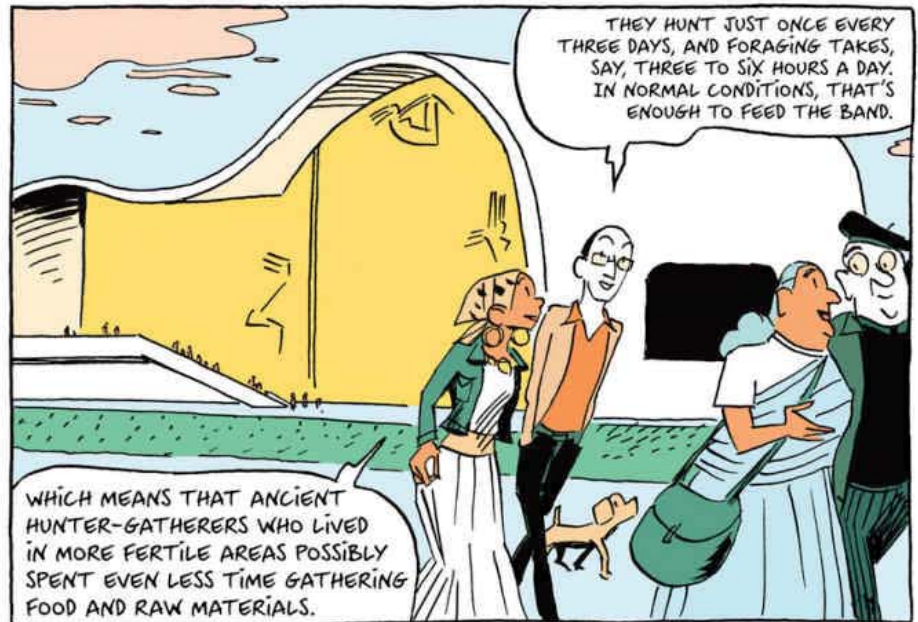
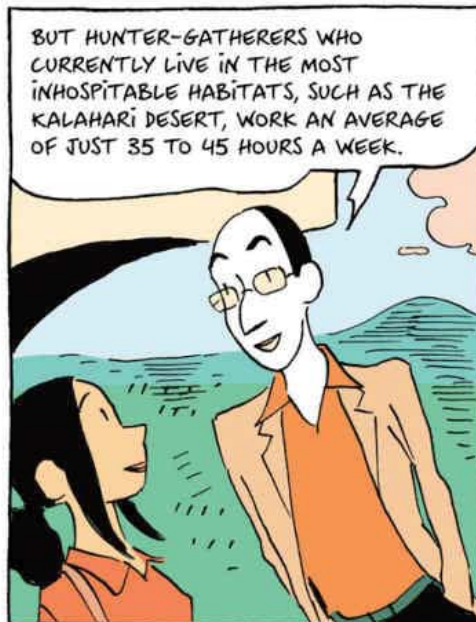
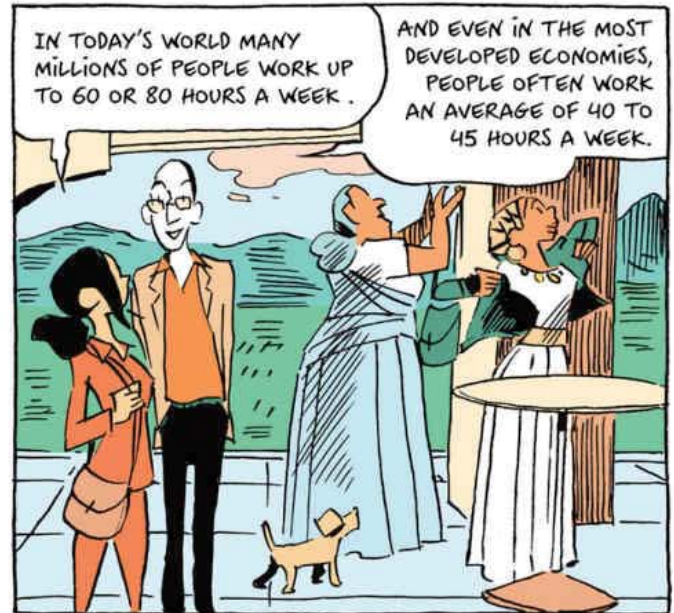
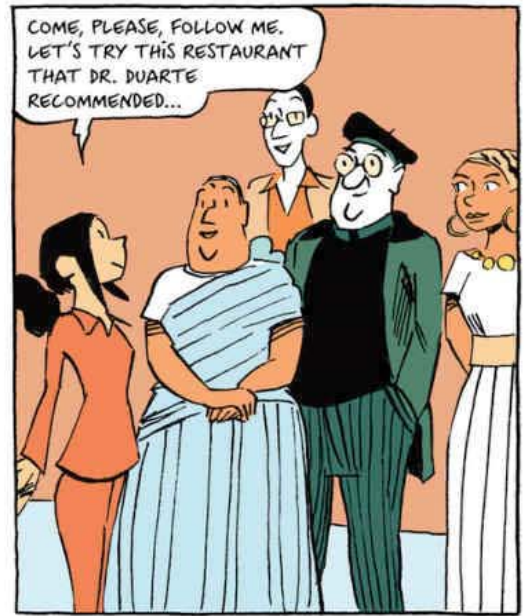
WHAT DO YOU ACTUALLY NEED TO KNOW ABOUT NATURE IN ORDER TO GET BY AS A COMPUTER ENGINEER, AN INSURANCE AGENT OR A HISTORY TEACHER?



FOR THE VAST MAJORITY OF LIFE'S NECESSITIES, YOU RELY BLINDLY ON THE HELP OF OTHER PEOPLE WHOSE KNOWLEDGE IS ALSO LIMITED TO A TINY FIELD OF EXPERTISE.

COLLECTIVELY, HUMAN SOCIETIES TODAY KNOW FAR MORE THAN STONE-AGE COMMUNITIES. BUT AT THE INDIVIDUAL LEVEL, ANCIENT FORAGERS WERE THE MOST KNOWLEDGEABLE AND SKILLFUL PEOPLE IN HISTORY!





AND ANOTHER THING, THEY WOULDN'T HAVE HAD ANYTHING LIKE SO MANY HOUSEHOLD CHORES!

NO DISHES TO DO! AND NO VACUUMING, NO FLOORS TO POLISH OR DIAPERS TO CHANGE, AND DEFINITELY NO BILLS TO PAY!

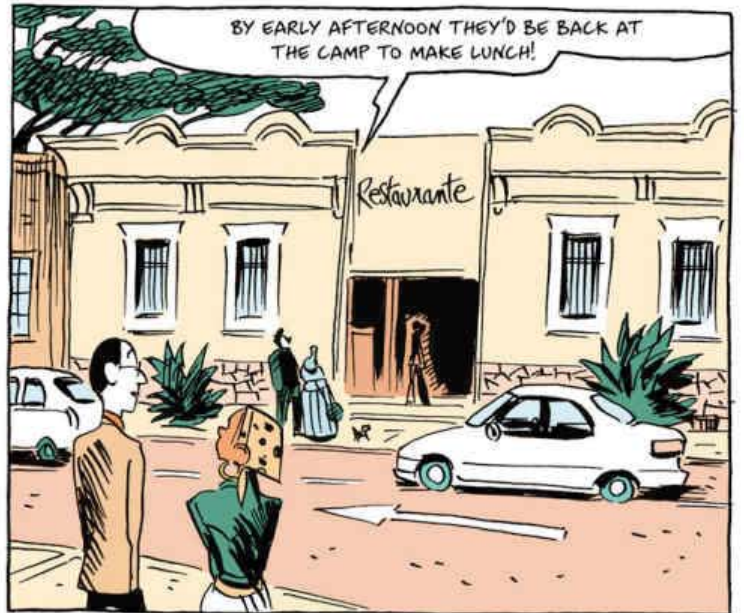
THE FORAGER ECONOMY GAVE MOST PEOPLE MORE INTERESTING LIVES THAN AGRICULTURE OR INDUSTRY CAN OFFER!



IN OUR MODERN WORLD, A FACTORY WORKER CAN LEAVE HER HOUSE AT ABOUT SEVEN IN THE MORNING, TRUDGE THROUGH POLLUTED STREETS TO A WORKSHOP, AND THEN OPERATE THE SAME MACHINE ALL DAY LONG... TEN HOURS OF MIND-NUMBING WORK BEFORE RETURNING HOME AT ABOUT SEVEN IN THE EVENING TO FACE THE DISHES AND THE LAUNDRY!



30,000 YEARS AGO, A FORAGER MIGHT LEAVE CAMP WITH HER COMPANIONS AT MAYBE EIGHT IN THE MORNING. THEY'D ROAM THROUGH NEARBY FORESTS AND MEADOWS, PICKING MUSHROOMS, DIGGING FOR ROOT VEGETABLES, CATCHING FROGS...



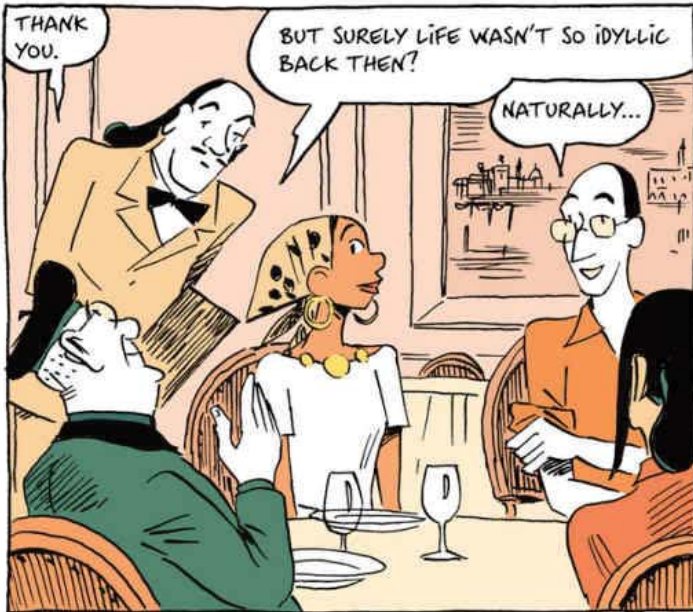
BY EARLY AFTERNOON THEY'D BE BACK AT THE CAMP TO MAKE LUNCH!



THAT LEFT PLENTY OF TIME FOR PLAYING WITH THEIR KIDS OR JUST HANGING OUT!



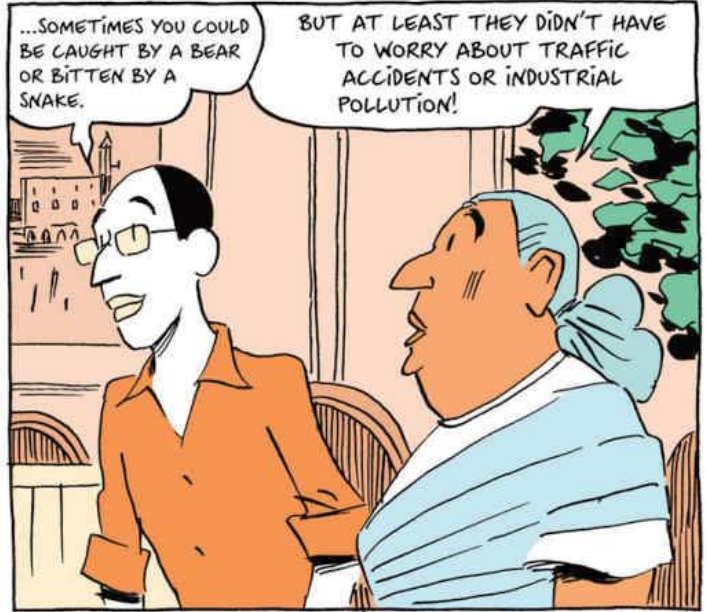
OR FOR GOSSIPING AND TELLING STORIES!



THANK YOU.

BUT SURELY LIFE WASN'T SO IDYLIC BACK THEN?

NATURALLY...



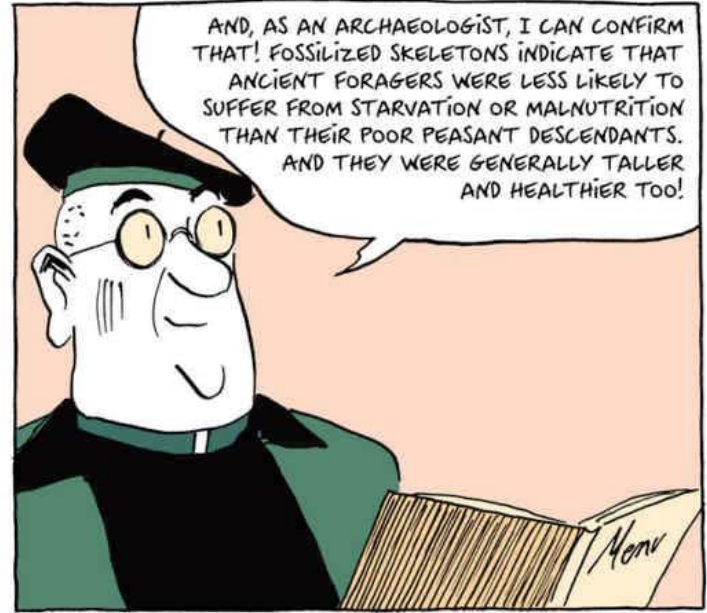
...SOMETIMES YOU COULD BE CAUGHT BY A BEAR OR BITTEN BY A SNAKE.

BUT AT LEAST THEY DIDN'T HAVE TO WORRY ABOUT TRAFFIC ACCIDENTS OR INDUSTRIAL POLLUTION!



IN MOST PLACES AND MOST OF THE TIME, FORAGING PROVIDED IDEAL NUTRITION.

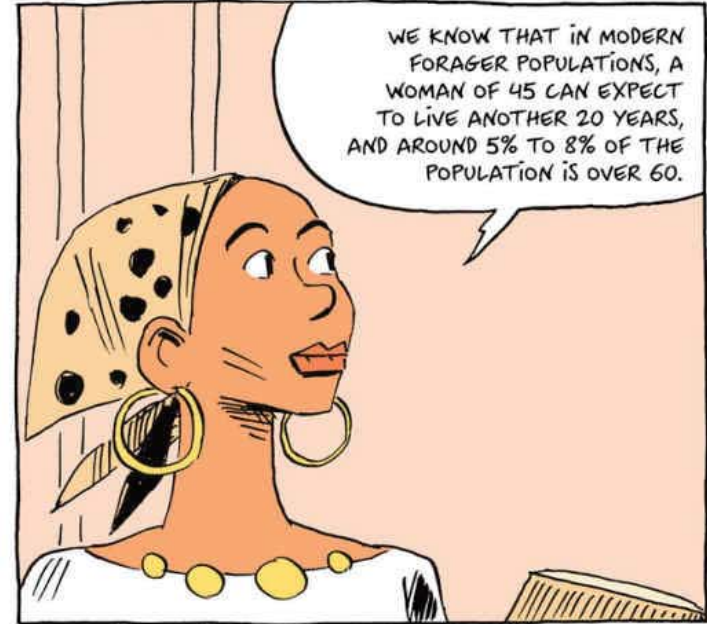
AS A BIOLOGIST, I DON'T FIND THAT AT ALL SURPRISING. HUMANS LIVED AS FORAGERS FOR HUNDREDS OF THOUSANDS OF YEARS, SO THE HUMAN BODY WAS WELL ADAPTED TO A FORAGING DIET.



AND, AS AN ARCHAEOLOGIST, I CAN CONFIRM THAT! FOSSILIZED SKELETONS INDICATE THAT ANCIENT FORAGERS WERE LESS LIKELY TO SUFFER FROM STARVATION OR MALNUTRITION THAN THEIR POOR PEASANT DESCENDANTS. AND THEY WERE GENERALLY TALLER AND HEALTHIER TOO!



APPARENTLY, THEIR AVERAGE LIFE EXPECTANCY WAS ONLY ABOUT 30 OR 40 YEARS, BUT THAT'S MOSTLY DUE TO HIGH INFANT MORTALITY RATES. CHILDREN WHO MADE IT THROUGH THOSE PERILOUS EARLY YEARS HAD A GOOD CHANCE OF GETTING TO 50 OR 60—AS OLD AS 80 IN SOME CASES!



WE KNOW THAT IN MODERN FORAGER POPULATIONS, A WOMAN OF 45 CAN EXPECT TO LIVE ANOTHER 20 YEARS, AND AROUND 5% TO 8% OF THE POPULATION IS OVER 60.

THE SECRET OF THE FORAGERS' SUCCESS, THE THING THAT PROTECTED THEM FROM FAMINE AND MALNUTRITION, WAS THEIR VARIED DIET.



SUBSISTENCE FARMERS TEND TO HAVE A VERY LIMITED, UNBALANCED DIET. EVEN MORE SO IN PREMODERN TIMES WHEN AN AGRICULTURAL POPULATION WOULD GET MOST OF THEIR CALORIES FROM A SINGLE CROP...



WHEAT, POTATOES OR RICE... A DIET LIKE THAT DOESN'T HAVE ALL THE VITAMINS, MINERALS AND OTHER NUTRITIONAL ELEMENTS THAT HUMANS NEED.



TYPICAL PEASANTS IN TRADITIONAL CHINA ATE RICE FOR BREAKFAST, LUNCH AND DINNER. IF THEY WERE LUCKY, THEY MIGHT HAVE THE SAME THE FOLLOWING DAY.

AND, UNFORTUNATELY, THERE ARE STILL PEOPLE DYING OF MALNUTRITION IN SOME PARTS OF THE WORLD TODAY.

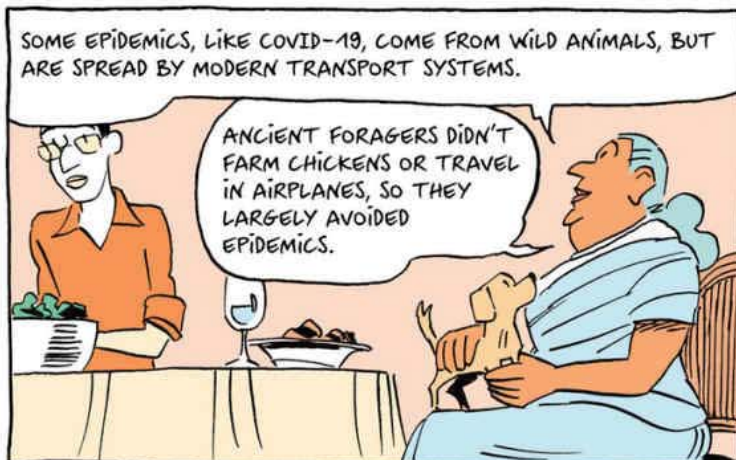
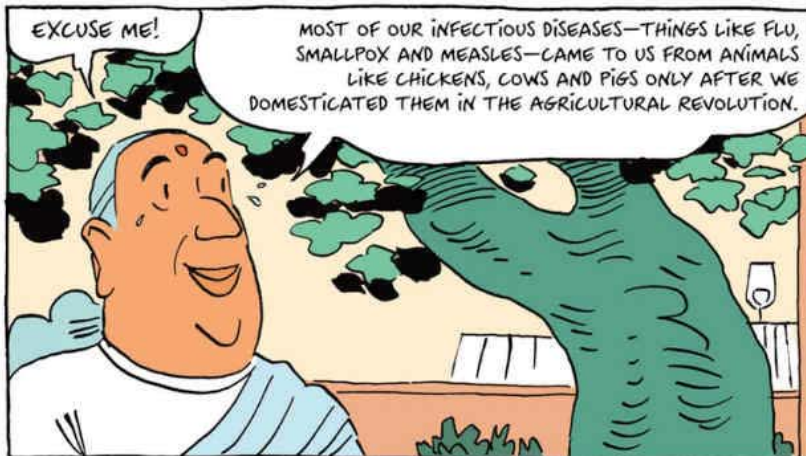
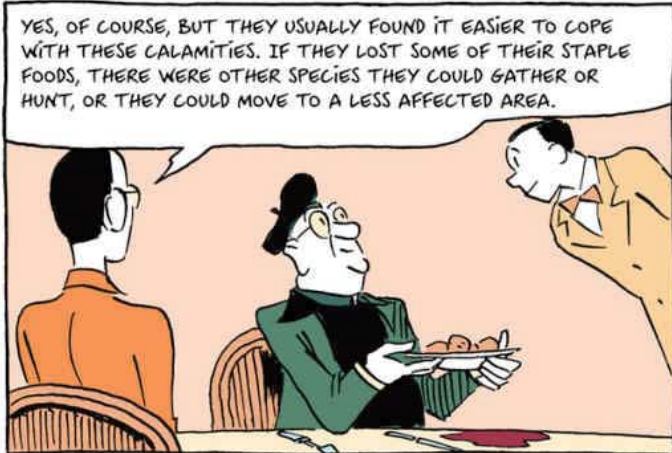


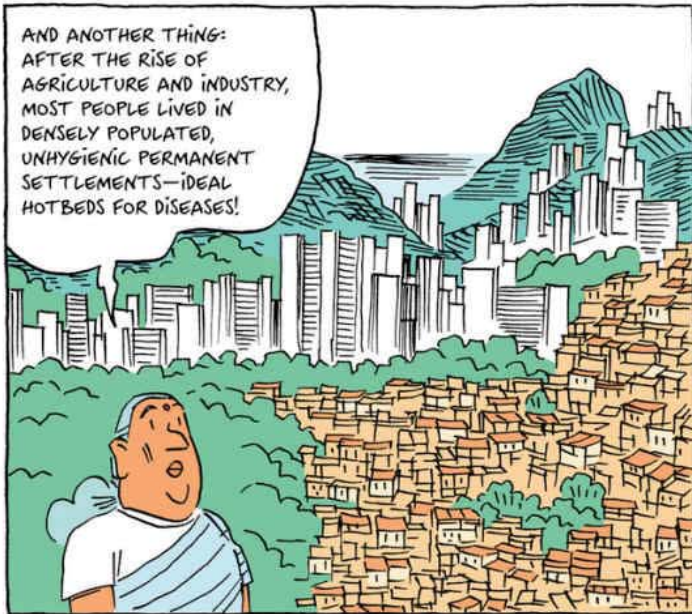
WHAT A CONTRAST TO ANCIENT FORAGERS WHO REGULARLY ATE DOZENS OF DIFFERENT FOODSTUFFS! THE ANCIENT ANCESTORS OF THOSE RICE-EATING PEASANTS MIGHT HAVE HAD BERRIES AND MUSHROOMS FOR BREAKFAST, THEN FRUITS, SNAILS AND TURTLES FOR LUNCH, AND RABBIT STEAK WITH WILD ONIONS FOR DINNER! THIS DIVERSITY MEANT THAT FORAGERS GOT ALL THE NUTRIENTS THEY NEEDED.



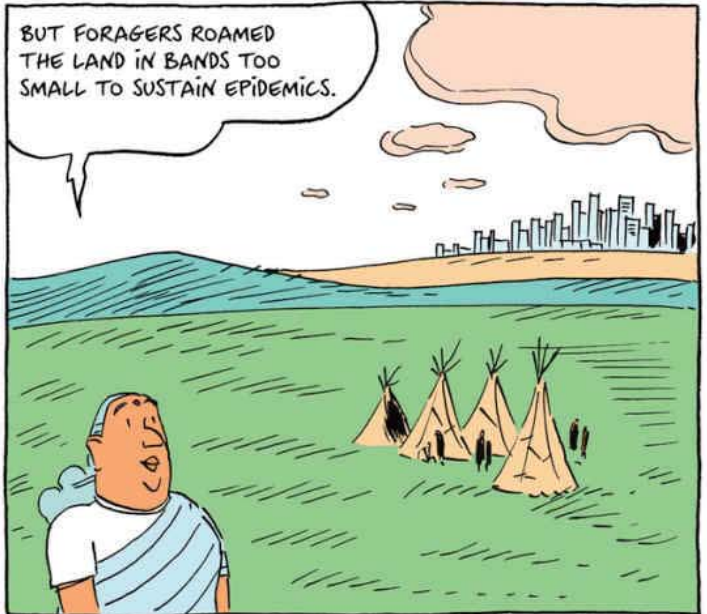
THERE WAS ANOTHER BENEFIT TOO: BECAUSE THEY WEREN'T DEPENDENT ON ANY ONE TYPE OF FOOD, THEY WEREN'T SO LIKELY TO GO HUNGRY IF A PARTICULAR FOOD SOURCE FAILED. AGRICULTURAL SOCIETIES ARE RAVAGED BY FAMINE IF DROUGHTS, FLOODS OR FIRES RUIN THEIR ANNUAL RICE OR POTATO CROP.



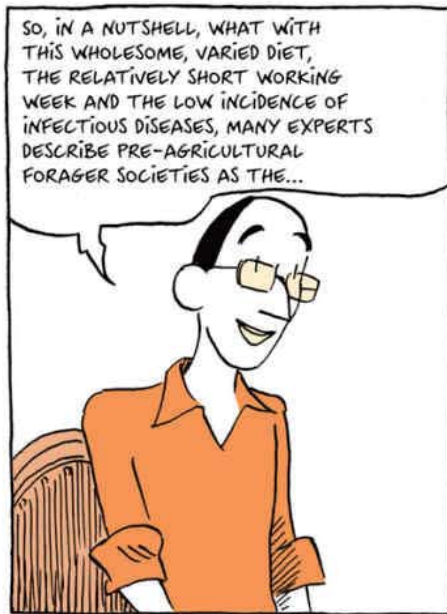




AND ANOTHER THING:
AFTER THE RISE OF
AGRICULTURE AND INDUSTRY,
MOST PEOPLE LIVED IN
DENSELY POPULATED,
UNHYGIENIC PERMANENT
SETTLEMENTS—IDEAL
HOTBEDS FOR DISEASES!



BUT FORAGERS ROAMED
THE LAND IN BANDS TOO
SMALL TO SUSTAIN EPIDEMICS.



SO, IN A NUTSHELL, WHAT WITH
THIS WHOLESOME, VARIED DIET,
THE RELATIVELY SHORT WORKING
WEEK AND THE LOW INCIDENCE OF
INFECTIOUS DISEASES, MANY EXPERTS
DESCRIBE PRE-AGRICULTURAL
FORAGER SOCIETIES AS THE...



...ORIGINAL AFFLUENT SOCIETIES!



HA! HA! HA!

SORRY, I HAVE TO
LEAVE EARLY TO
CATCH MY FLIGHT.

YUVAL, I'LL SEE
YOU IN THE
VÈZÈRE VALLEY
IN TWO WEEKS.

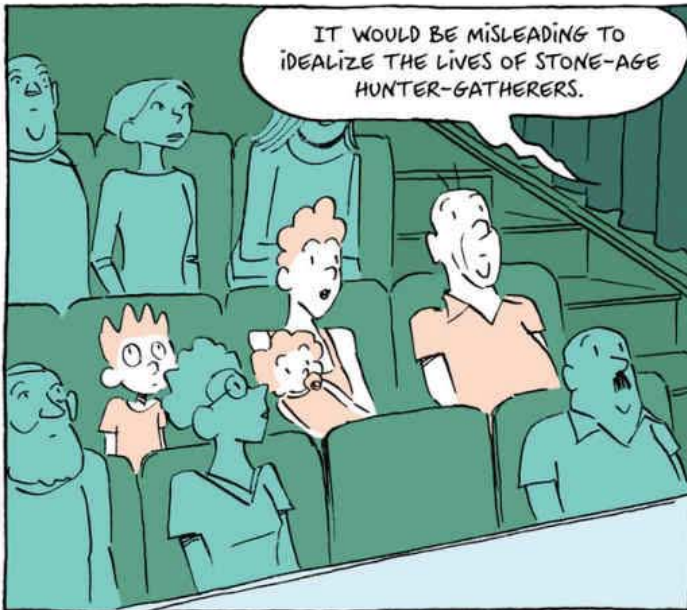


YES! I LOOK FORWARD TO HEARING YOUR
THOUGHTS ON THE SPIRITUAL LIVES OF
HUNTER-GATHERERS.

I WENT TO
VÈZÈRE LAST
YEAR, IT'S SUCH A
MAGICAL PLACE...



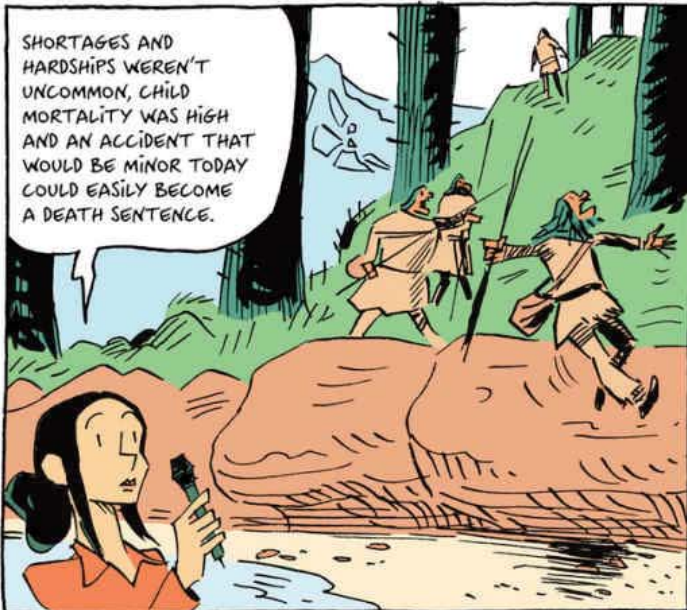
OH DEAR! I'M SO SORRY, BUT
WE NEED TO GET BACK TO
THE CONFERENCE, THEY'LL
BE WAITING FOR US!



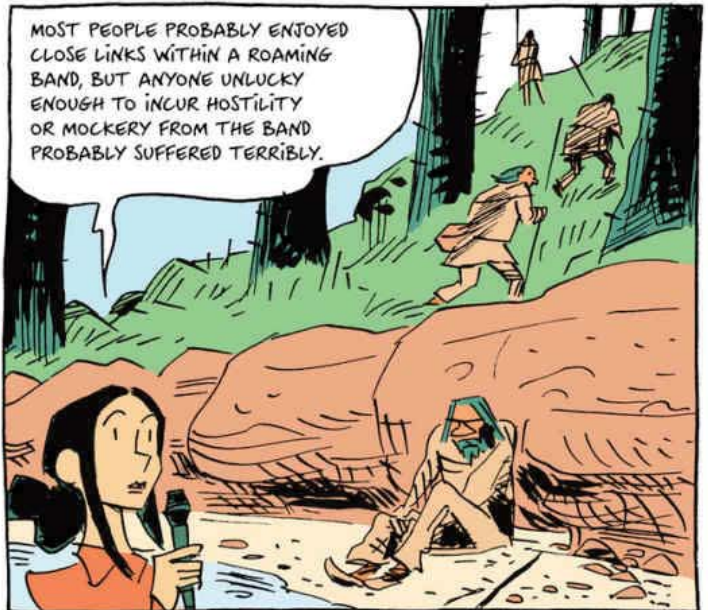
IT WOULD BE MISLEADING TO IDEALIZE THE LIVES OF STONE-AGE HUNTER-GATHERERS.



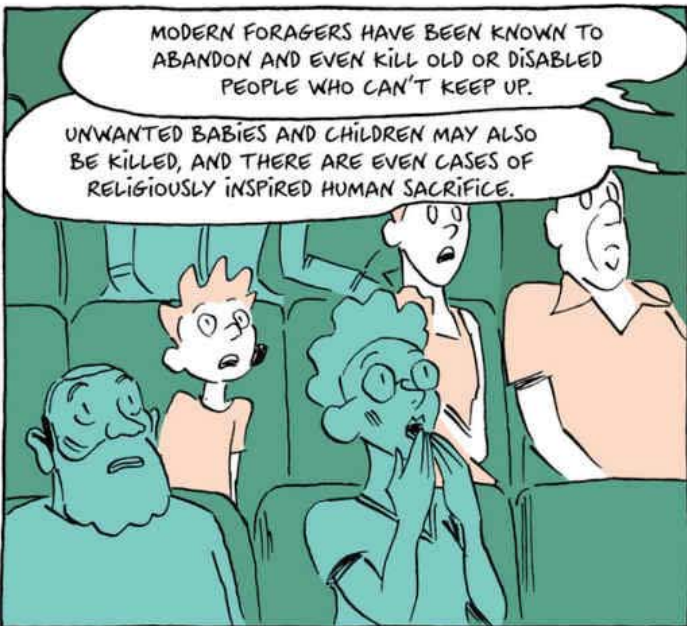
THEY MAY WELL HAVE LIVED BETTER LIVES THAN MOST PEOPLE IN AGRICULTURAL AND INDUSTRIAL SOCIETIES, BUT THEIR WORLD COULD STILL BE HARSH AND UNFORGIVING.



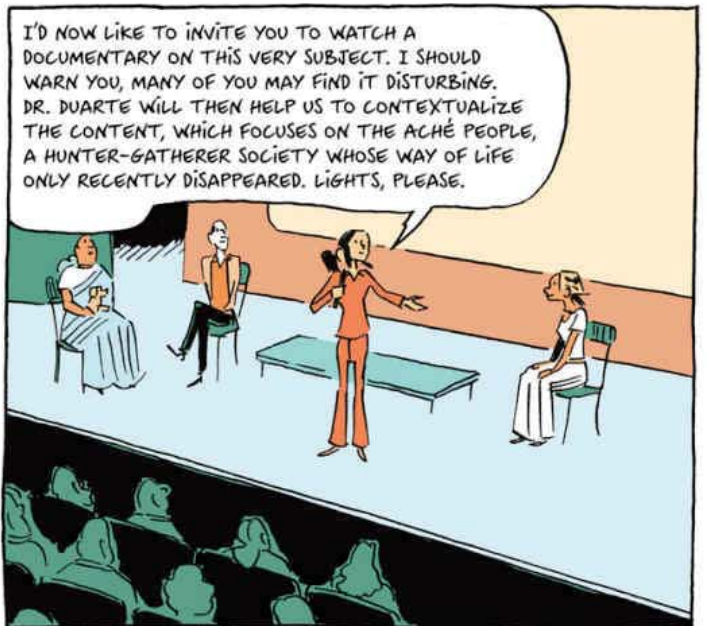
SHORTAGES AND HARDSHIPS WEREN'T UNCOMMON, CHILD MORTALITY WAS HIGH AND AN ACCIDENT THAT WOULD BE MINOR TODAY COULD EASILY BECOME A DEATH SENTENCE.



MOST PEOPLE PROBABLY ENJOYED CLOSE LINKS WITHIN A ROAMING BAND, BUT ANYONE UNLUCKY ENOUGH TO INCUR HOSTILITY OR MOCKERY FROM THE BAND PROBABLY SUFFERED TERRIBLY.

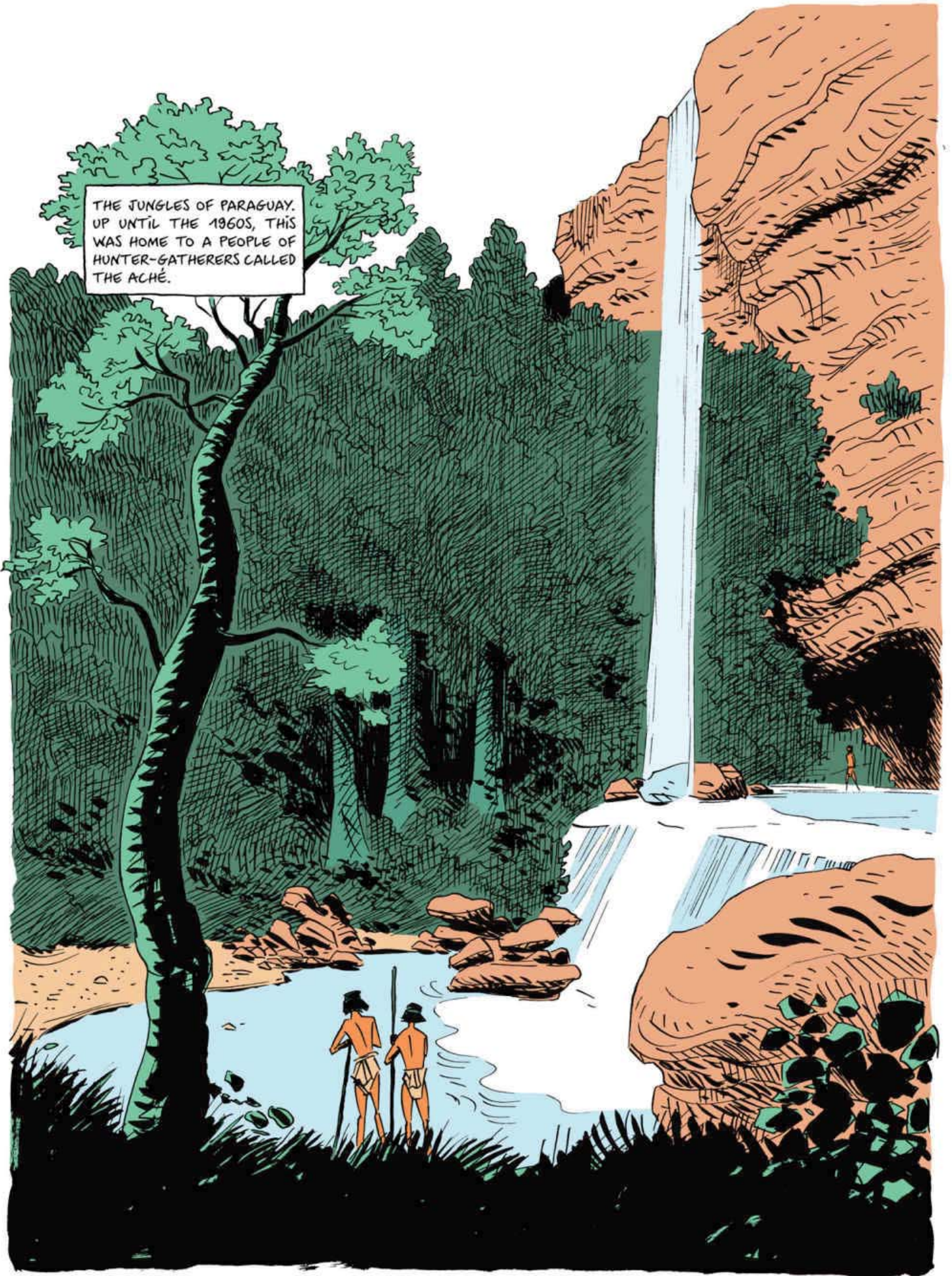


MODERN FORAGERS HAVE BEEN KNOWN TO ABANDON AND EVEN KILL OLD OR DISABLED PEOPLE WHO CAN'T KEEP UP. UNWANTED BABIES AND CHILDREN MAY ALSO BE KILLED, AND THERE ARE EVEN CASES OF RELIGIOUSLY INSPIRED HUMAN SACRIFICE.



I'D NOW LIKE TO INVITE YOU TO WATCH A DOCUMENTARY ON THIS VERY SUBJECT. I SHOULD WARN YOU, MANY OF YOU MAY FIND IT DISTURBING. DR. DUARTE WILL THEN HELP US TO CONTEXTUALIZE THE CONTENT, WHICH FOCUSES ON THE ACHÉ PEOPLE, A HUNTER-GATHERER SOCIETY WHOSE WAY OF LIFE ONLY RECENTLY DISAPPEARED. LIGHTS, PLEASE.

THE JUNGLES OF PARAGUAY.
UP UNTIL THE 1960S, THIS
WAS HOME TO A PEOPLE OF
HUNTER-GATHERERS CALLED
THE ACHÉ.



THEIR TRADITIONS AND THEIR WAY OF LIFE DISTURBED MANY ANTHROPOLOGISTS AT THE TIME. SOME OF THEIR CUSTOMS ARE VERY APPEALING, WHILE OTHERS ARE UNUSUALLY SHOCKING.



FOR EXAMPLE, WHEN A VALUED MEMBER OF A GROUP DIED, THE ACHÉ CUSTOM WAS TO KILL A LITTLE GIRL, AND BURY THE TWO TOGETHER.



ANTHROPOLOGISTS WHO INTERVIEWED THE ACHÉ IN THE 1960S RECORDED THE CASE OF A MIDDLE-AGED MAN WHO WAS ABANDONED BY HIS BAND WHEN HE FELL SICK AND COULD NOT KEEP UP WITH THE OTHERS.



THE ACHÉ LEFT HIM ALONE UNDER A TREE.

AT THE MERCY OF SCAVENGERS...



THE VULTURES WAITED A LONG TIME.



BUT THE MAN RECOVERED.



HE GOT TO HIS FEET AND WENT BACK TO HIS BAND.



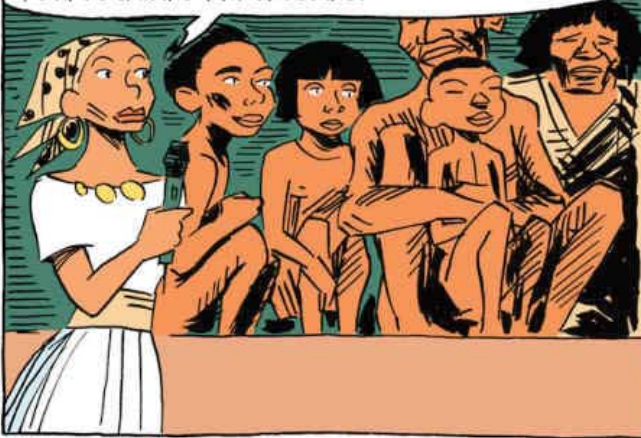
ANOTHER MEMBER OF THE BAND FOUND A NEW NAME FOR HIM...



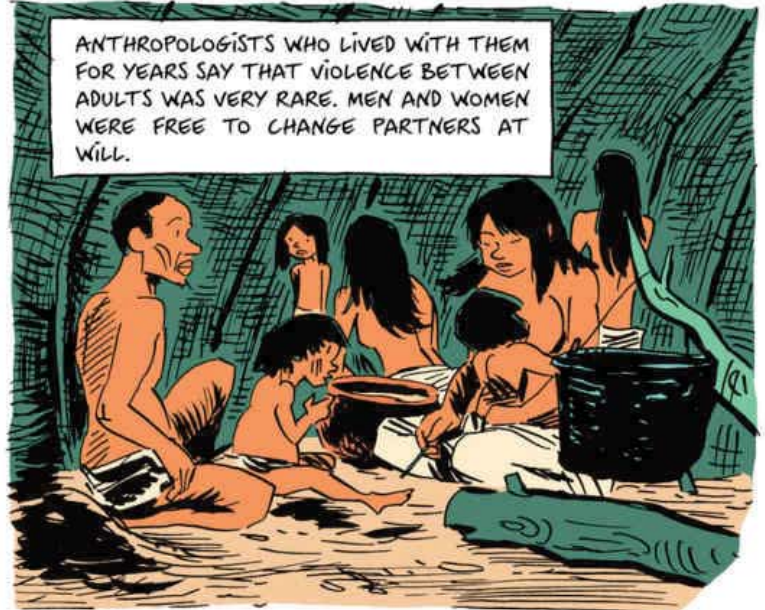
HEY, VULTURE POOP!



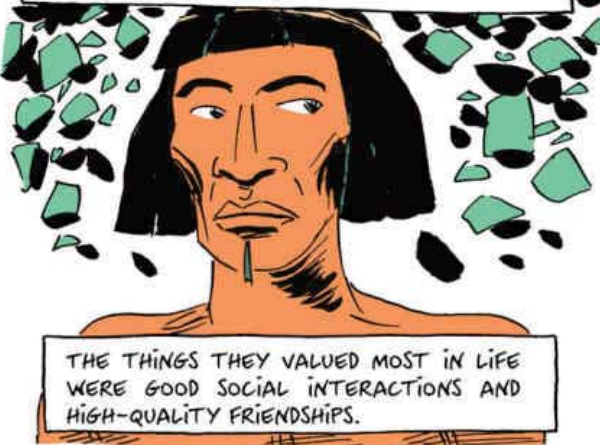
YOU MIGHT CONCLUDE THAT THE ACHÉ WERE BRUTAL CRIMINALS. BUT DON'T BE TOO QUICK TO JUDGE THEM. AS THIS ARCHIVE DOCUMENTARY SHOWS US, THE ACHÉ ALSO HAD POSITIVE QUALITIES. MOST OF THE TIME THEY WERE FRIENDLY TO ONE ANOTHER, THEY WERE ALWAYS SMILING AND LAUGHING.



ANTHROPOLOGISTS WHO LIVED WITH THEM FOR YEARS SAY THAT VIOLENCE BETWEEN ADULTS WAS VERY RARE. MEN AND WOMEN WERE FREE TO CHANGE PARTNERS AT WILL.



THEY HAD NO HIERARCHY OR LEADERS, AND GENERALLY AVOIDED DOMINEERING INDIVIDUALS. THEY WERE EXTREMELY GENEROUS WITH THEIR FEW POSSESSIONS, AND WEREN'T IN THE LEAST INTERESTED IN SUCCESS OR WEALTH.



THE THINGS THEY VALUED MOST IN LIFE WERE GOOD SOCIAL INTERACTIONS AND HIGH-QUALITY FRIENDSHIPS.

THEY VIEWED THE KILLING OF CHILDREN, THE SICK OR THE ELDERLY IN THE SAME WAY THAT MANY PEOPLE NOW VIEW ABORTION AND EUTHANASIA.



WE SHOULDN'T LOSE SIGHT OF THE FACT THAT THE ACHÉ WERE RELENTLESSLY HUNTED AND KILLED BY PARAGUAYAN FARMERS. THE DESPERATE NEED TO FLEE THEIR KILLERS COULD EXPLAIN THEIR EXCEPTIONALLY HARSH ATTITUDE TOWARD ANYONE WHO MIGHT BE A LIABILITY TO THE BAND.



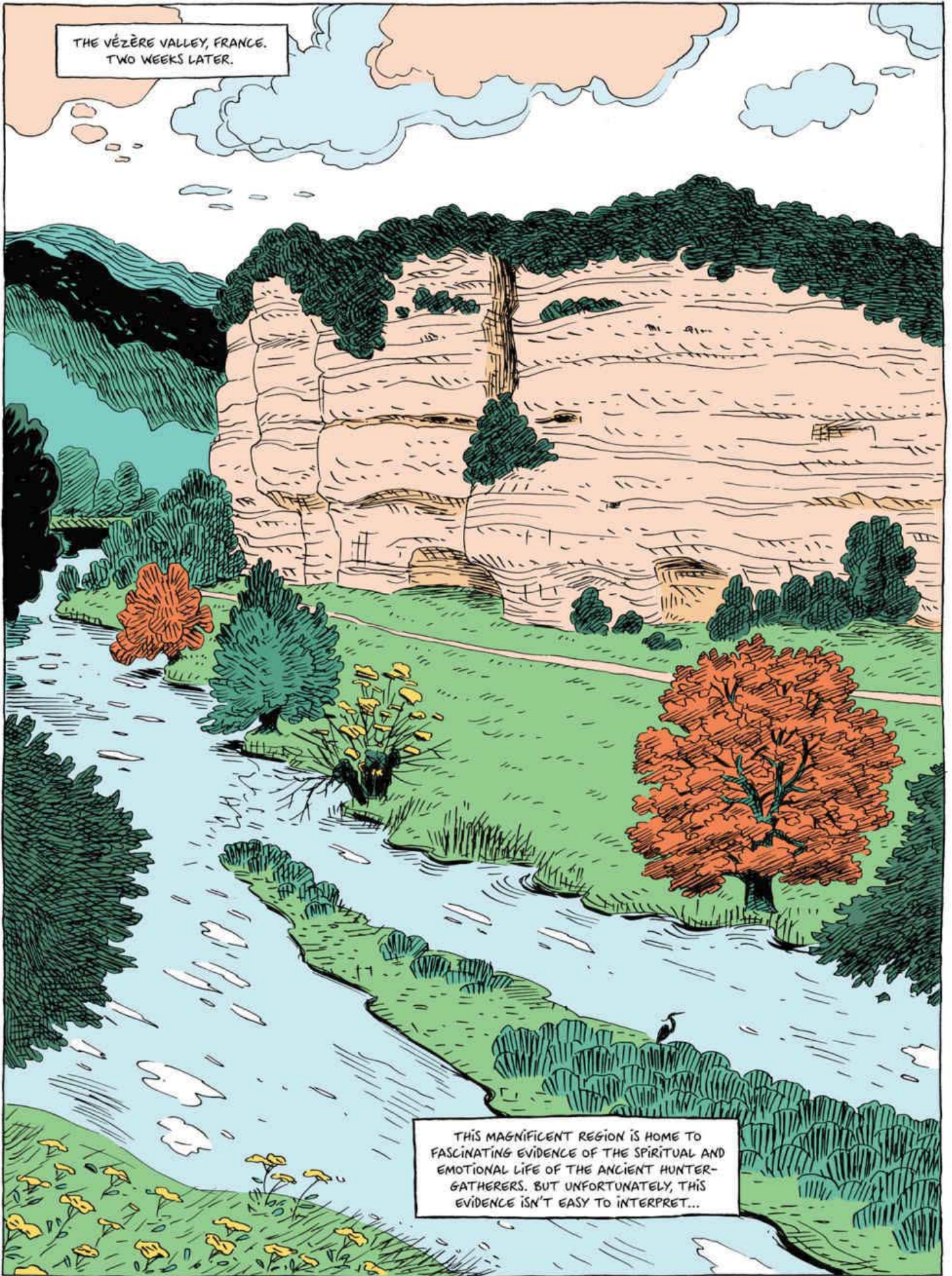
THE TRUTH IS THAT, LIKE EVERY HUMAN SOCIETY, ACHÉ SOCIETY WAS VERY COMPLEX. WE SHOULDN'T RUSH TO DEMONIZE OR IDEALIZE THEM BASED ON SUCH LIMITED KNOWLEDGE OR INTERACTION. THEY WEREN'T ANGELS OR DEMONS—JUST HUMANS.



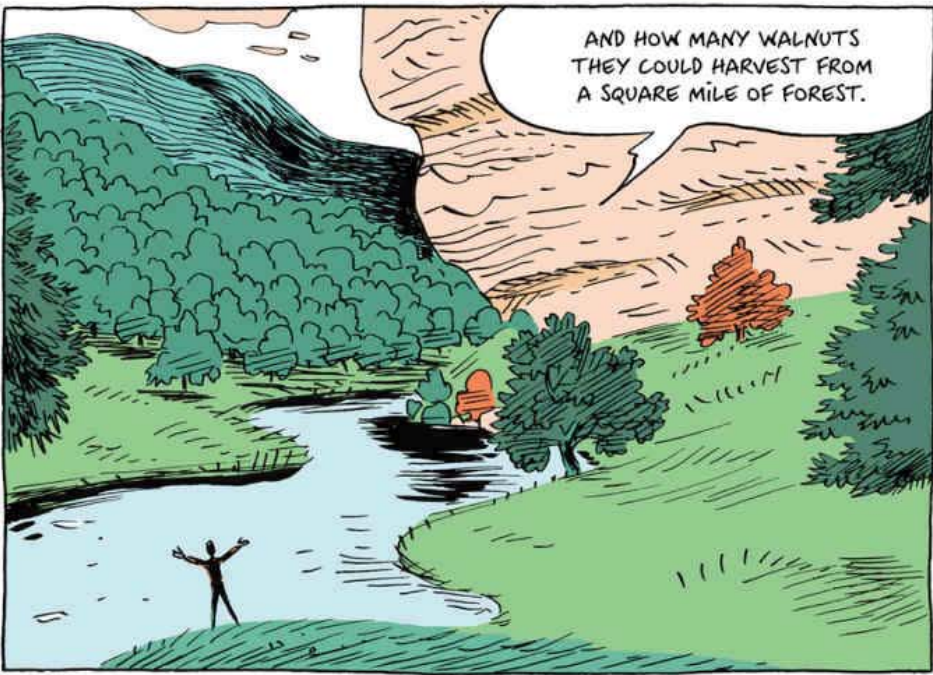
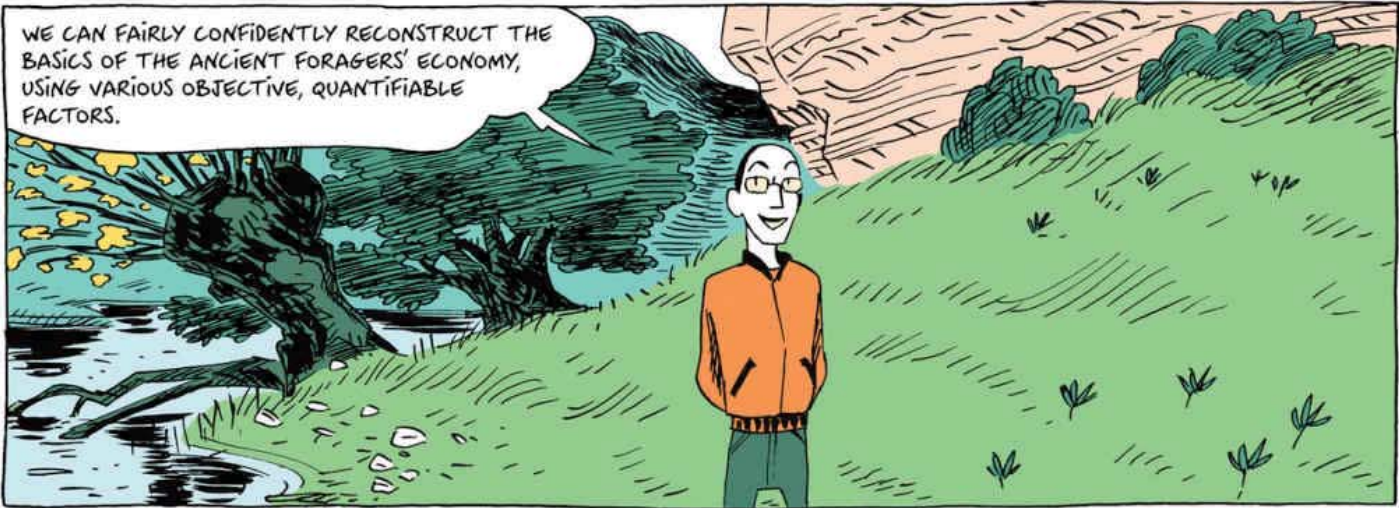
AND THAT'S EXACTLY WHAT STONE-AGE HUNTER-GATHERERS WERE TOO!

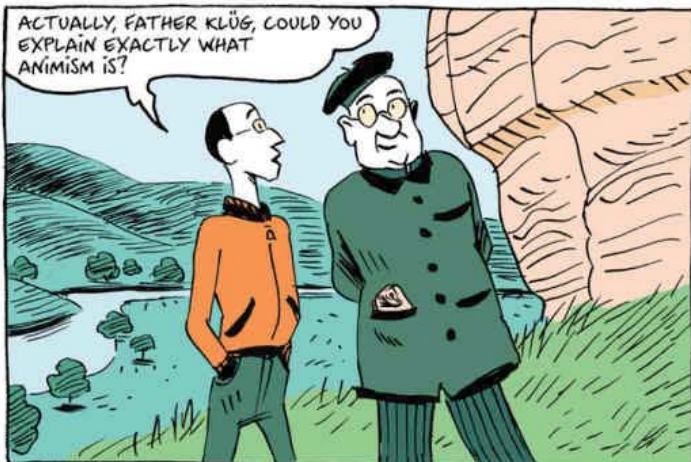
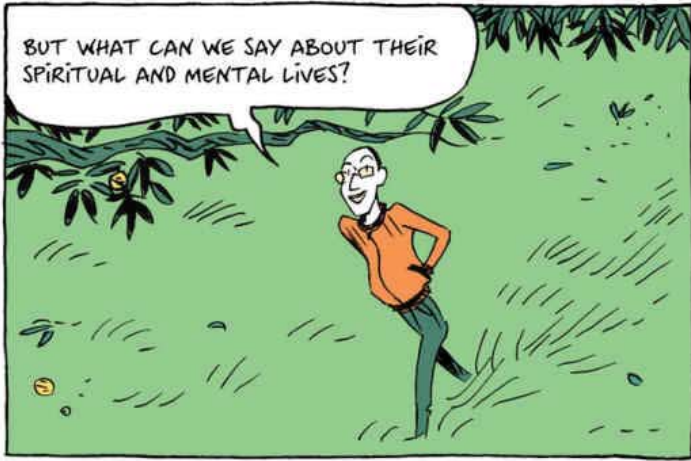


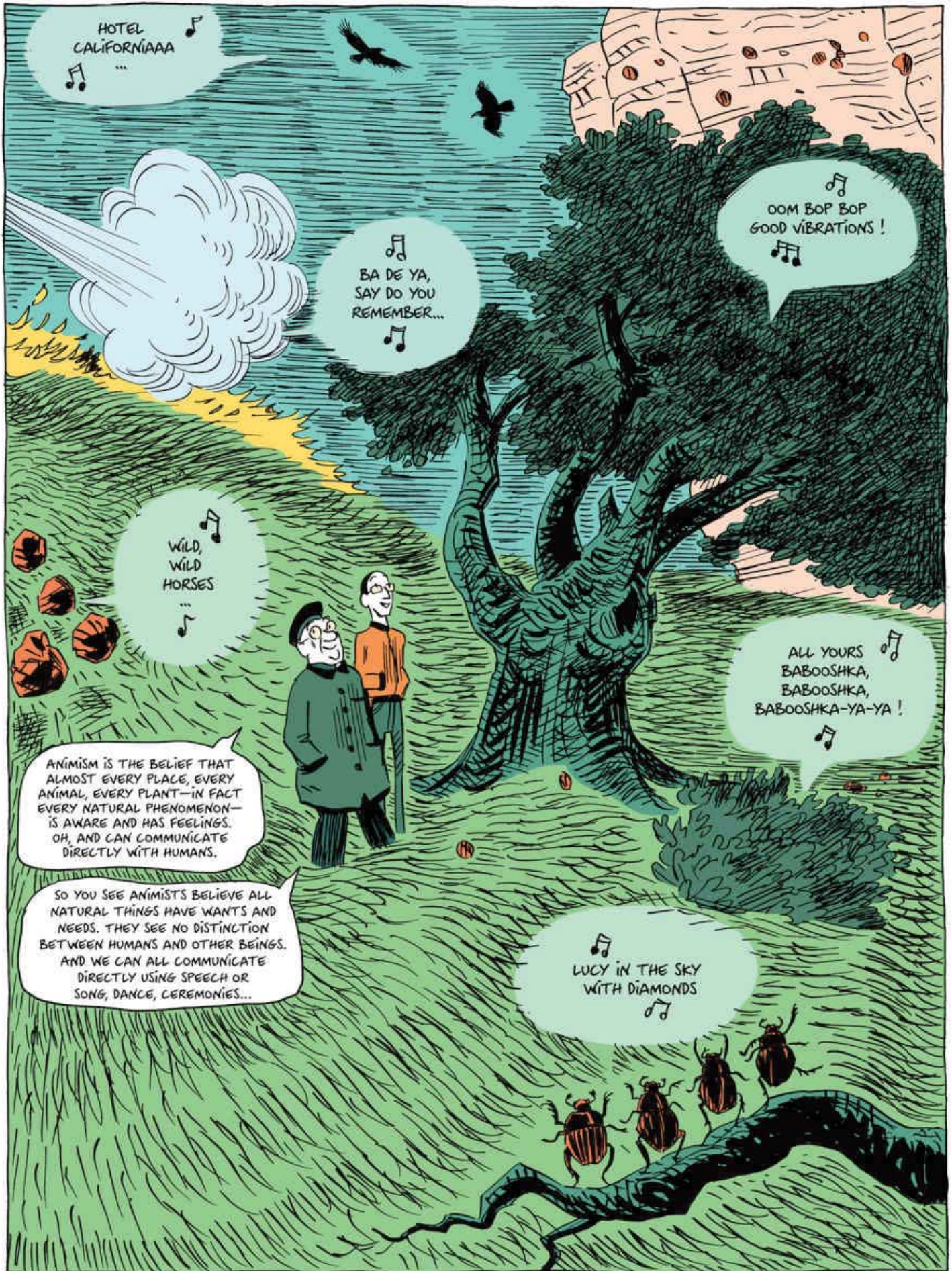
THE VÈZÈRE VALLEY, FRANCE.
TWO WEEKS LATER.



THIS MAGNIFICENT REGION IS HOME TO FASCINATING EVIDENCE OF THE SPIRITUAL AND EMOTIONAL LIFE OF THE ANCIENT HUNTER-GATHERERS. BUT UNFORTUNATELY, THIS EVIDENCE ISN'T EASY TO INTERPRET...







HOTEL CALIFORNIAAAA

BA DE YA,
SAY DO YOU
REMEMBER...

OOM BOP BOP
GOOD VIBRATIONS!

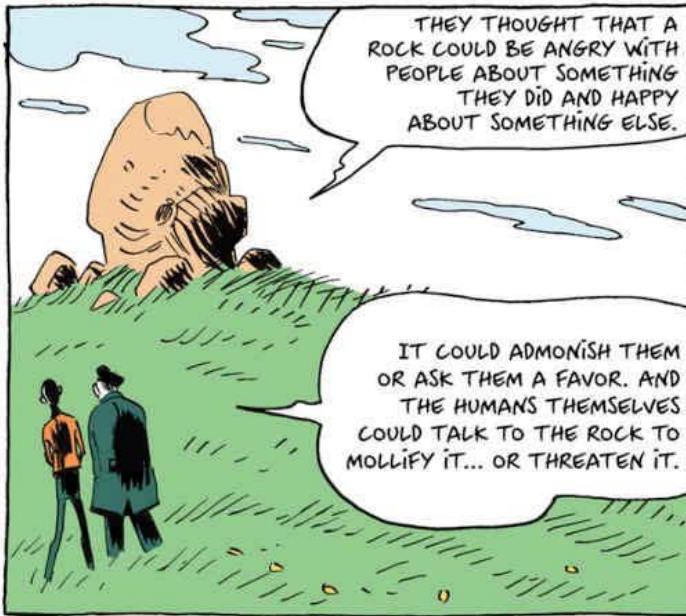
WILD,
WILD
HORSES

ALL YOURS
BABOOSHKA,
BABOOSHKA,
BABOOSHKA-YA-YA!

ANIMISM IS THE BELIEF THAT
ALMOST EVERY PLACE, EVERY
ANIMAL, EVERY PLANT—IN FACT
EVERY NATURAL PHENOMENON—
IS AWARE AND HAS FEELINGS.
OH, AND CAN COMMUNICATE
DIRECTLY WITH HUMANS.

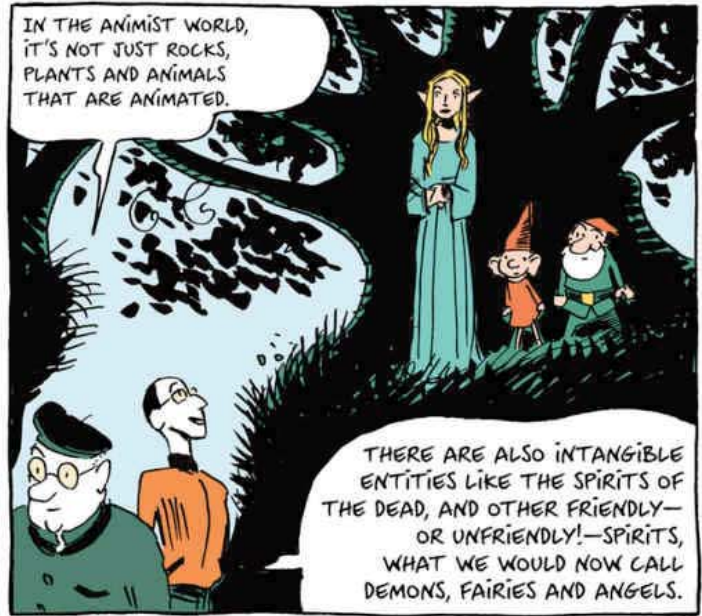
SO YOU SEE ANIMISTS BELIEVE ALL
NATURAL THINGS HAVE WANTS AND
NEEDS. THEY SEE NO DISTINCTION
BETWEEN HUMANS AND OTHER BEINGS.
AND WE CAN ALL COMMUNICATE
DIRECTLY USING SPEECH OR
SONG, DANCE, CEREMONIES...

LUCY IN THE SKY
WITH DIAMONDS



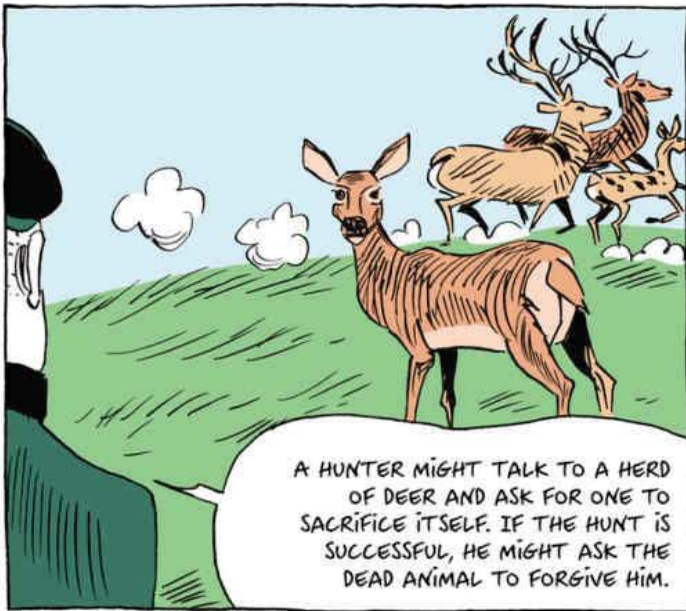
THEY THOUGHT THAT A ROCK COULD BE ANGRY WITH PEOPLE ABOUT SOMETHING THEY DID AND HAPPY ABOUT SOMETHING ELSE.

IT COULD ADMONISH THEM OR ASK THEM A FAVOR. AND THE HUMANS THEMSELVES COULD TALK TO THE ROCK TO MOLLIFY IT... OR THREATEN IT.

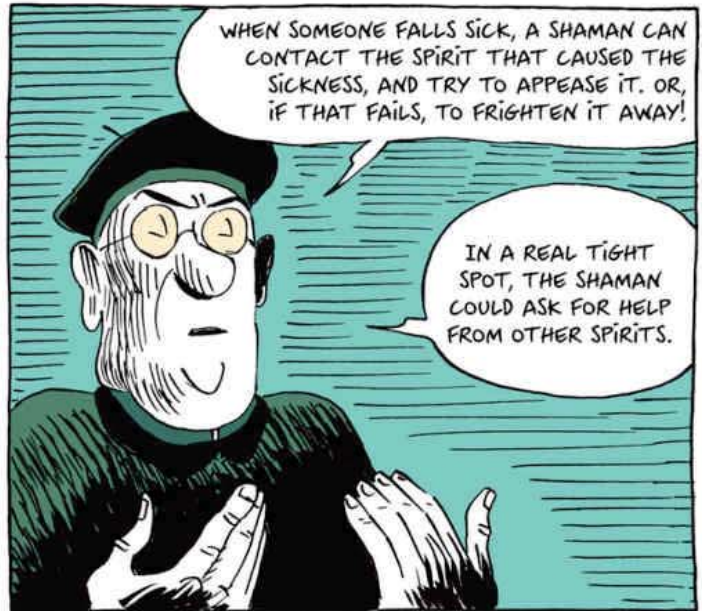


IN THE ANIMIST WORLD, IT'S NOT JUST ROCKS, PLANTS AND ANIMALS THAT ARE ANIMATED.

THERE ARE ALSO INTANGIBLE ENTITIES LIKE THE SPIRITS OF THE DEAD, AND OTHER FRIENDLY—OR UNFRIENDLY!—SPIRITS, WHAT WE WOULD NOW CALL DEMONS, FAIRIES AND ANGELS.



A HUNTER MIGHT TALK TO A HERD OF DEER AND ASK FOR ONE TO SACRIFICE ITSELF. IF THE HUNT IS SUCCESSFUL, HE MIGHT ASK THE DEAD ANIMAL TO FORGIVE HIM.



WHEN SOMEONE FALLS SICK, A SHAMAN CAN CONTACT THE SPIRIT THAT CAUSED THE SICKNESS, AND TRY TO APPEASE IT. OR, IF THAT FAILS, TO FRIGHTEN IT AWAY!

IN A REAL TIGHT SPOT, THE SHAMAN COULD ASK FOR HELP FROM OTHER SPIRITS.



AND THERE'S SOMETHING ALL THESE COMMUNICATIONS HAVE IN COMMON:

THEY'RE NOT ADDRESSED TO UNIVERSAL GODS BUT TO LOCAL ENTITIES, PERHAPS A SPECIFIC TREE OR STREAM, OR A PARTICULAR GHOST.

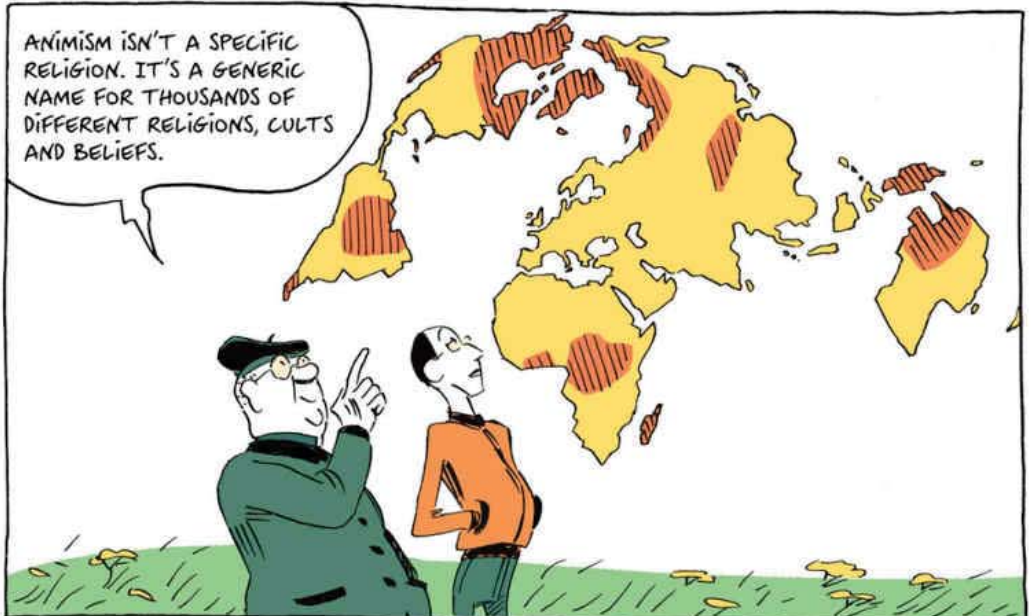


SO, JUST AS THEY SEE NO DISTINCTION BETWEEN HUMANS AND OTHER BEINGS, THEY ALSO IMAGINE NO STRICT HIERARCHY.

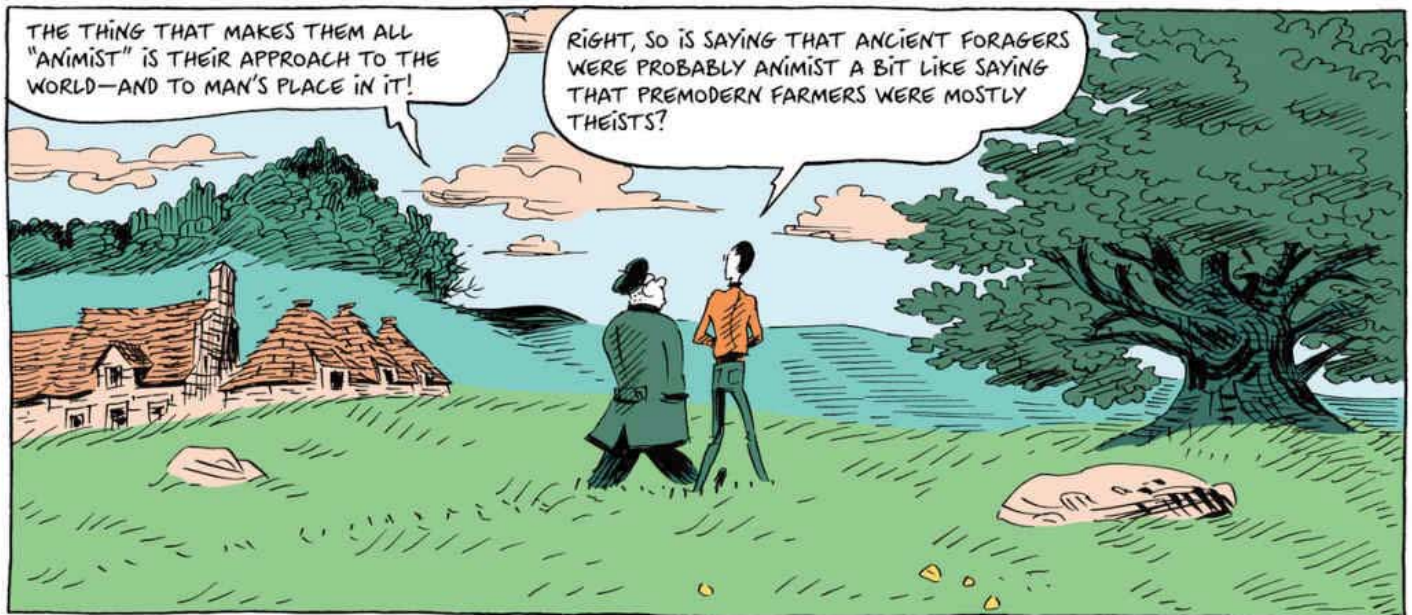
NON-HUMAN ENTITIES AREN'T THERE JUST TO PROVIDE FOR HUMAN NEEDS.



AND THEY DON'T BELIEVE IN ALL-POWERFUL GODS, EITHER, THE SORT WHO RUN THE WORLD HOWEVER THEY PLEASE. THE ANIMIST WORLD DOESN'T REVOLVE AROUND HUMANS OR ANY OTHER PARTICULAR GROUP OF BEINGS.

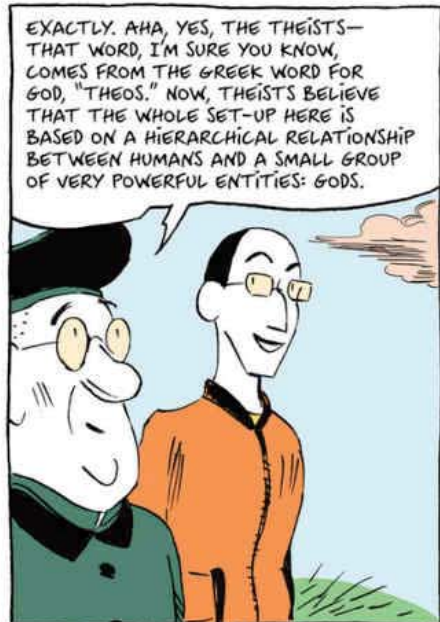


ANIMISM ISN'T A SPECIFIC RELIGION. IT'S A GENERIC NAME FOR THOUSANDS OF DIFFERENT RELIGIONS, CULTS AND BELIEFS.



THE THING THAT MAKES THEM ALL "ANIMIST" IS THEIR APPROACH TO THE WORLD—AND TO MAN'S PLACE IN IT!

RIGHT, SO IS SAYING THAT ANCIENT FORAGERS WERE PROBABLY ANIMIST A BIT LIKE SAYING THAT PREMODERN FARMERS WERE MOSTLY THEISTS?



EXACTLY. AHA, YES, THE THEISTS—THAT WORD, I'M SURE YOU KNOW, COMES FROM THE GREEK WORD FOR GOD, "THEOS." NOW, THEISTS BELIEVE THAT THE WHOLE SET-UP HERE IS BASED ON A HIERARCHICAL RELATIONSHIP BETWEEN HUMANS AND A SMALL GROUP OF VERY POWERFUL ENTITIES: GODS.



IS IT SAFE TO SAY THAT PREMODERN FARMERS TENDED TO BE THEISTS?

YES, BUT THAT DOESN'T TELL US A GREAT DEAL... THE DEVIL'S IN THE DETAIL!

BECAUSE THE GENERIC TERM THEIST IS VERY BROAD. EACH OF THESE DIFFERENT GROUPS OF "THEISTS" THOUGHT THE OTHERS' BELIEFS AND PRACTICES WERE WEIRD AND HERETICAL. THE DIFFERENCES BETWEEN "ANIMIST" GROUPS OF FORAGERS WERE PROBABLY JUST AS BIG. THEIR RELIGIOUS EXPERIENCE MAY HAVE BEEN TURBULENT AND FULL OF CONTROVERSIES, REFORMS AND REVOLUTIONS.



Chinese bureaucrat (1st century)

Roman legionary (2nd century)

Viking warrior (10th century)

Iranian Sufi (12th century)

Aztec priest (15th century)

Witch-burning Puritan, Massachusetts (17th century)

Jewish rabbi, Poland (18th century)

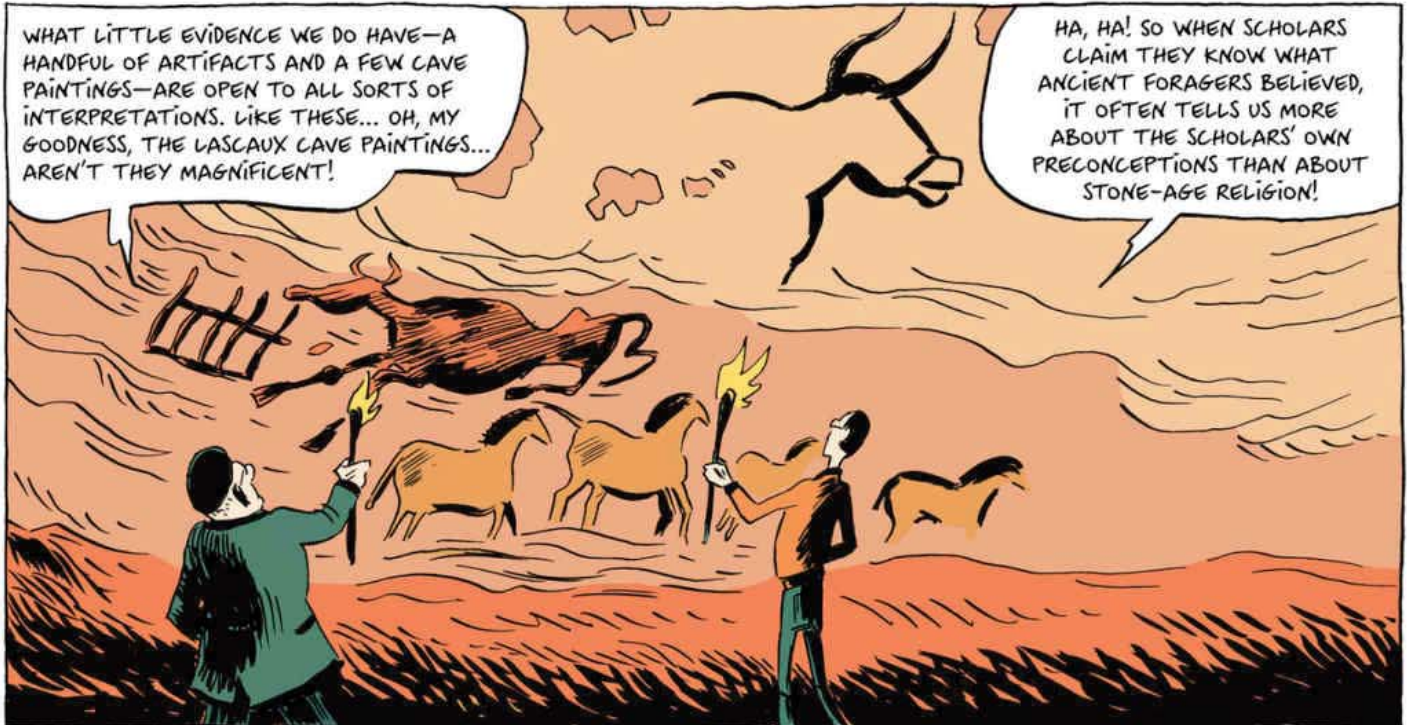
STILL, THESE CAUTIOUS GENERALIZATIONS ARE ABOUT AS FAR AS WE CAN GO.



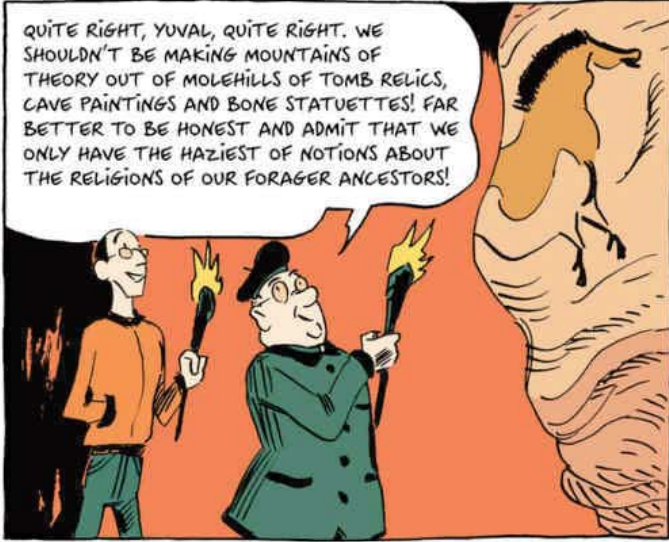
YOU SEE, WE'RE JUST VERY SHORT OF EVIDENCE. ANY ATTEMPT TO DESCRIBE THE SPECIFICS OF STONE-AGE SPIRITUALITY CAN'T HELP BEING HIGHLY SPECULATIVE.



WHAT LITTLE EVIDENCE WE DO HAVE—A HANDFUL OF ARTIFACTS AND A FEW CAVE PAINTINGS—ARE OPEN TO ALL SORTS OF INTERPRETATIONS. LIKE THESE... OH, MY GOODNESS, THE LASCAUX CAVE PAINTINGS... AREN'T THEY MAGNIFICENT!



HA, HA! SO WHEN SCHOLARS CLAIM THEY KNOW WHAT ANCIENT FORAGERS BELIEVED, IT OFTEN TELLS US MORE ABOUT THE SCHOLARS' OWN PRECONCEPTIONS THAN ABOUT STONE-AGE RELIGION!

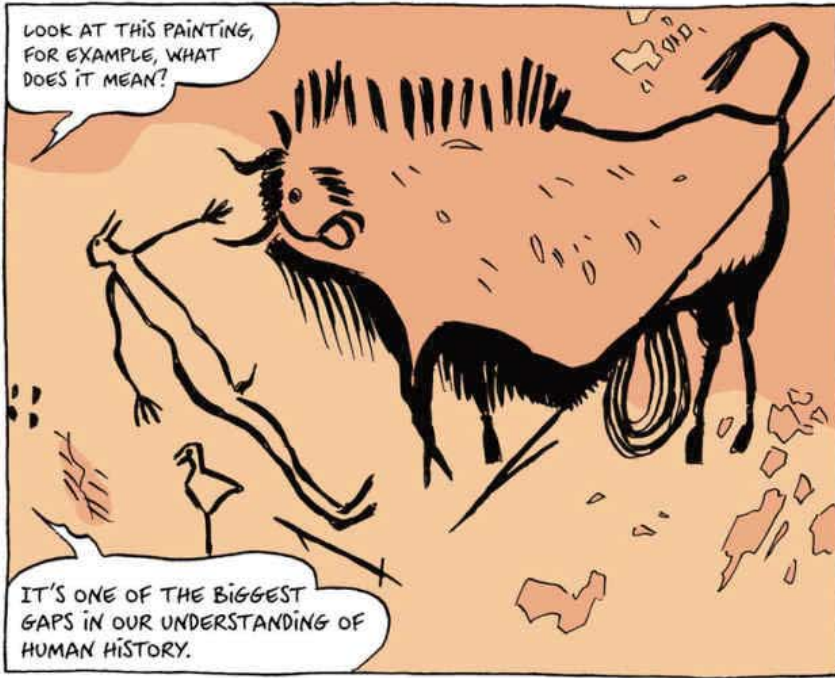


QUITE RIGHT, YUVAL, QUITE RIGHT. WE SHOULDN'T BE MAKING MOUNTAINS OF THEORY OUT OF MOLEHILLS OF TOMB RELICS, CAVE PAINTINGS AND BONE STATUETTES! FAR BETTER TO BE HONEST AND ADMIT THAT WE ONLY HAVE THE HAZIEST OF NOTIONS ABOUT THE RELIGIONS OF OUR FORAGER ANCESTORS!



WE ASSUME THAT THEY WERE ANIMISTS, BUT WE DON'T KNOW WHAT SORT OF SPIRITS THEY PRAYED TO, WHAT FESTIVALS THEY CELEBRATED OR WHAT TABOOS THEY KEPT.

WE DON'T EVEN KNOW WHAT STORIES THEY TOLD, FOR GOODNESS' SAKE!

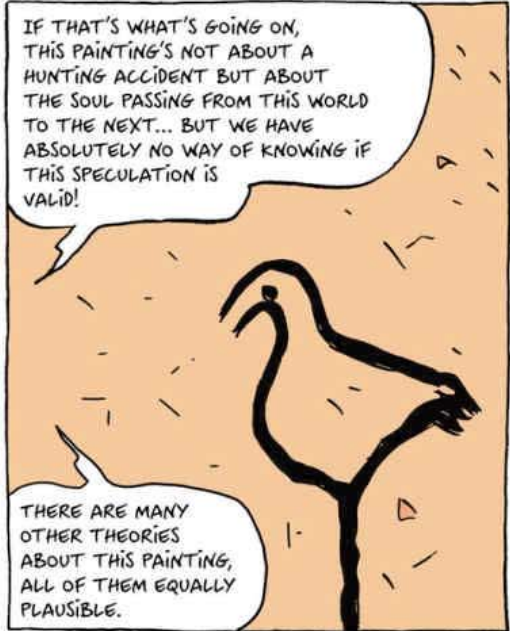


LOOK AT THIS PAINTING, FOR EXAMPLE, WHAT DOES IT MEAN?

IT'S ONE OF THE BIGGEST GAPS IN OUR UNDERSTANDING OF HUMAN HISTORY.

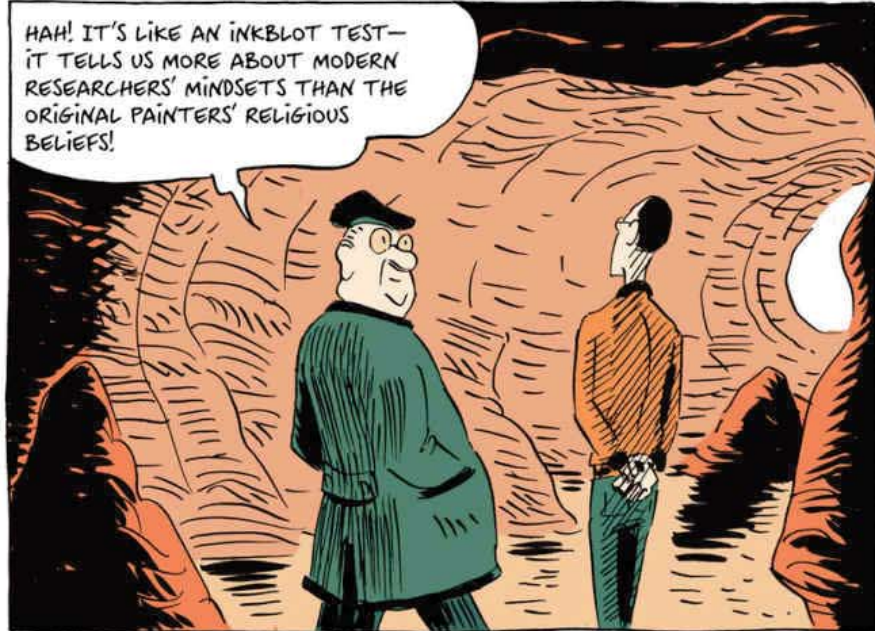


SOME PEOPLE SAY IT'S A MAN WITH A BIRD'S HEAD AND AN ERECT PENIS, AND HE'S BEING KILLED BY A BISON. THERE'S ANOTHER BIRD UNDER HIM, AND THAT MIGHT REPRESENT HIS SOUL BEING RELEASED FROM HIS BODY IN THE MOMENT OF DEATH.

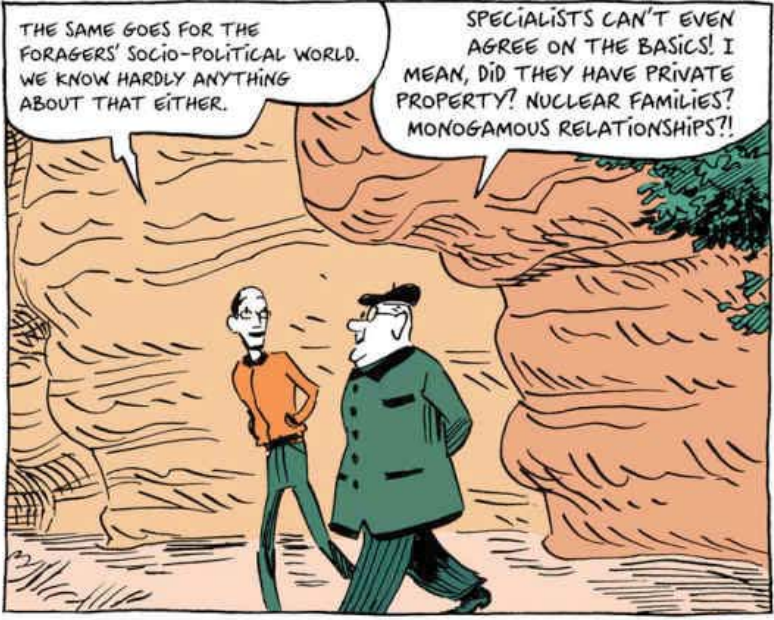


IF THAT'S WHAT'S GOING ON, THIS PAINTING'S NOT ABOUT A HUNTING ACCIDENT BUT ABOUT THE SOUL PASSING FROM THIS WORLD TO THE NEXT... BUT WE HAVE ABSOLUTELY NO WAY OF KNOWING IF THIS SPECULATION IS VALID!

THERE ARE MANY OTHER THEORIES ABOUT THIS PAINTING, ALL OF THEM EQUALLY PLAUSIBLE.

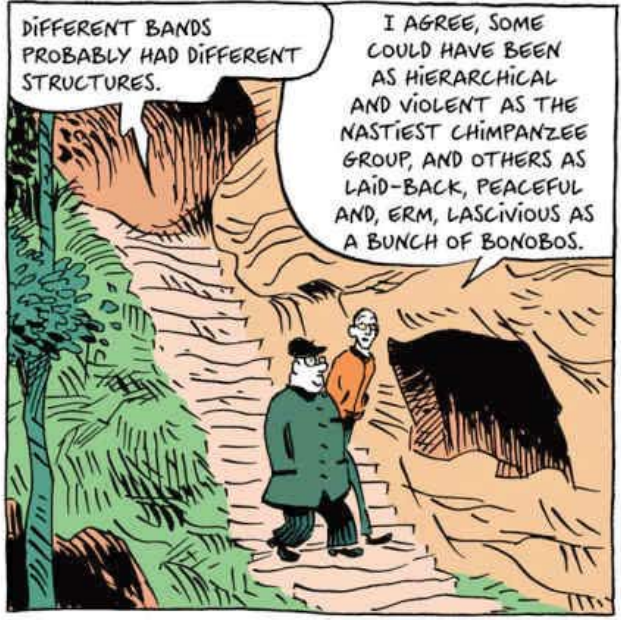


HAH! IT'S LIKE AN INKBLOT TEST—IT TELLS US MORE ABOUT MODERN RESEARCHERS' MINDSETS THAN THE ORIGINAL PAINTERS' RELIGIOUS BELIEFS!



THE SAME GOES FOR THE FORAGERS' SOCIO-POLITICAL WORLD. WE KNOW HARDLY ANYTHING ABOUT THAT EITHER.

SPECIALISTS CAN'T EVEN AGREE ON THE BASICS! I MEAN, DID THEY HAVE PRIVATE PROPERTY? NUCLEAR FAMILIES? MONOGAMOUS RELATIONSHIPS?!

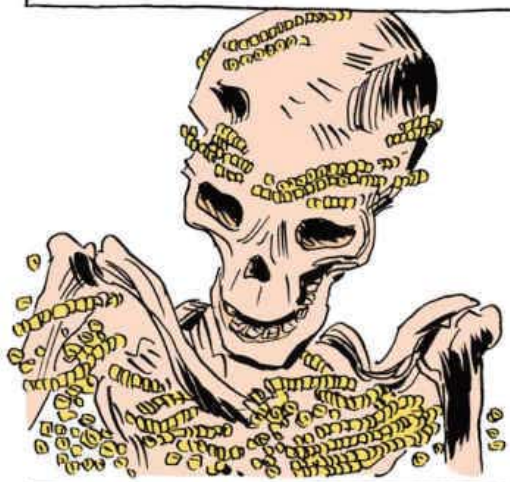


DIFFERENT BANDS PROBABLY HAD DIFFERENT STRUCTURES.

I AGREE, SOME COULD HAVE BEEN AS HIERARCHICAL AND VIOLENT AS THE NASTIEST CHIMPANZEE GROUP, AND OTHERS AS LAID-BACK, PEACEFUL AND, ERM, LASCIVIOUS AS A BUNCH OF BONOBO.



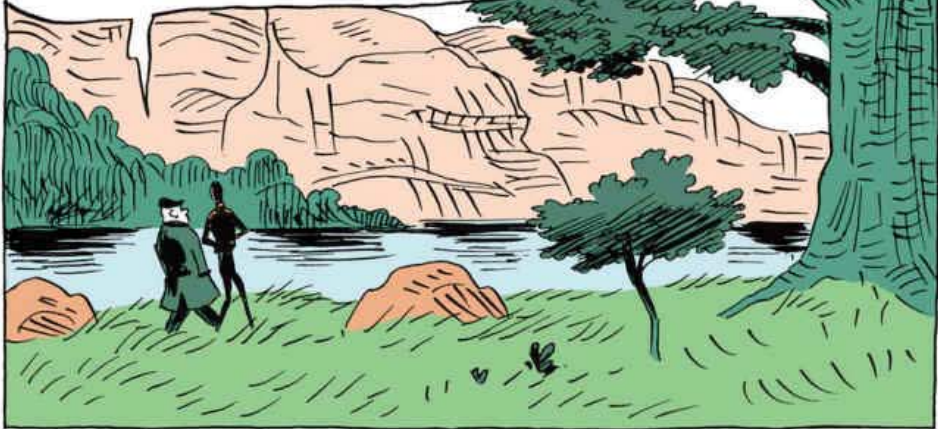
IN SUNGIR IN RUSSIA, ARCHAEOLOGISTS FOUND A 34,000-YEAR-OLD BURIAL SITE FROM A MAMMOTH-HUNTING CULTURE.



ONE GRAVE HAD THE SKELETON OF A 40-YEAR-OLD MAN COVERED WITH STRINGS OF BEADS MADE FROM MAMMOTH IVORY.

THAT GRAVE CONTAINED ABOUT 3,000 BEADS IN ALL. THE DEAD MAN WAS WEARING A HAT DECORATED WITH FOX TEETH, AND HE HAD 25 IVORY BRACELETS ON HIS WRISTS.

OTHER GRAVES AT THE SITE HAD FEWER ACCESSORIES... SO SCHOLARS DEDUCED THAT THESE SUNGIR MAMMOTH-HUNTERS LIVED IN A HIERARCHICAL SOCIETY, AND THAT THE DEAD MAN WAS HEAD OF A BAND, PERHAPS EVEN OF A TRIBE MADE UP OF SEVERAL BANDS.



IS IT POSSIBLE THAT JUST A FEW DOZEN MEMBERS OF ONE BAND COULD HAVE MADE ALL THOSE ACCESSORIES ???



WELL, IT SEEMS UNLIKELY.



ANYWAY, THE ARCHAEOLOGISTS THEN FOUND AN EVEN MORE INTERESTING GRAVE, WHERE TWO YOUNG BOYS HAD BEEN BURIED HEAD TO HEAD. ONE WAS 12 OR 13, THE OTHER 9 OR 10.



THE OLDER BOY WAS COVERED IN 5,000 IVORY BEADS. HE WAS ALSO WEARING A FOX-TOOTH HAT AND A BELT WITH 250 FOX TEETH ON IT—I TELL YOU, IT WOULD HAVE TAKEN AT LEAST 60 DEAD FOXES TO PRODUCE THAT MANY!

THE YOUNGER BOY WAS COVERED WITH 5,250 IVORY BEADS, AND BOTH SKELETONS WERE SURROUNDED BY STATUETTES AND IVORY OBJECTS.

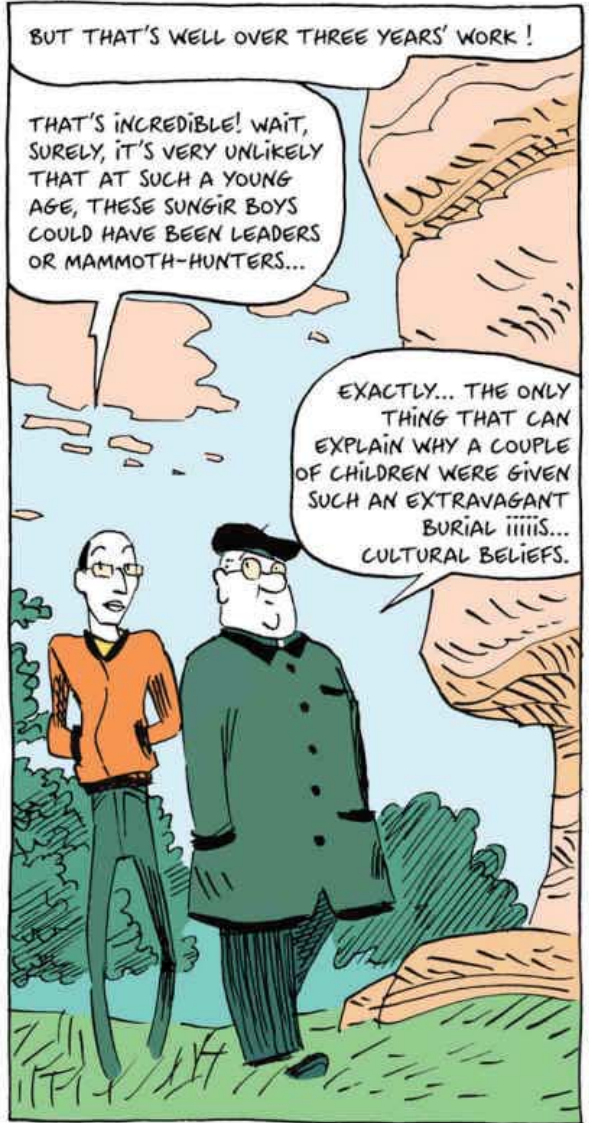
NOW, IT WOULD HAVE TAKEN A SKILLED ARTISAN ABOUT 45 MINUTES TO MAKE A SINGLE IVORY BEAD! IN OTHER WORDS, THE 10,000 BEADS ON THOSE CHILDREN WOULD HAVE TAKEN 7,500 HOURS OF DELICATE WORK—NOT TO MENTION ALL THE OTHER OBJECTS???



BUT THAT'S WELL OVER THREE YEARS' WORK!

THAT'S INCREDIBLE! WAIT, SURELY, IT'S VERY UNLIKELY THAT AT SUCH A YOUNG AGE, THESE SUNGIR BOYS COULD HAVE BEEN LEADERS OR MAMMOTH-HUNTERS...

EXACTLY... THE ONLY THING THAT CAN EXPLAIN WHY A COUPLE OF CHILDREN WERE GIVEN SUCH AN EXTRAVAGANT BURIAL IIIIIIS... CULTURAL BELIEFS.



THERE ARE THREE DIFFERENT THEORIES ABOUT THE SUNGIR BOYS... THE FIRST IS THAT THEY OWED THEIR ELEVATED STANDING TO THEIR PARENTS.



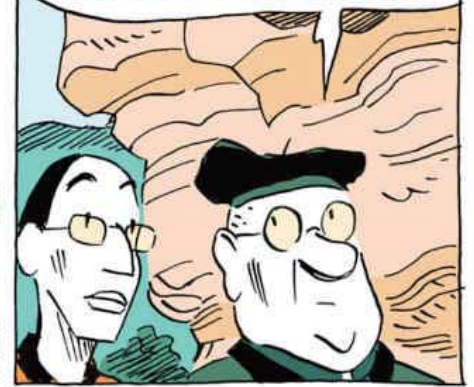
THEY COULD HAVE BEEN THE TRIBE LEADER'S CHILDREN... BUT RECENT DNA ANALYSIS HAS NEGATED THAT: IT SHOWED THAT THEY WEREN'T BROTHERS AND THE 40-YEAR-OLD MAN WASN'T THEIR FATHER.



THE SECOND THEORY SUGGESTS THAT WHEN THEY WERE BORN THEIR COMMUNITY IDENTIFIED THEM AS INCARNATIONS OF LONG-DEAD SPIRITS.



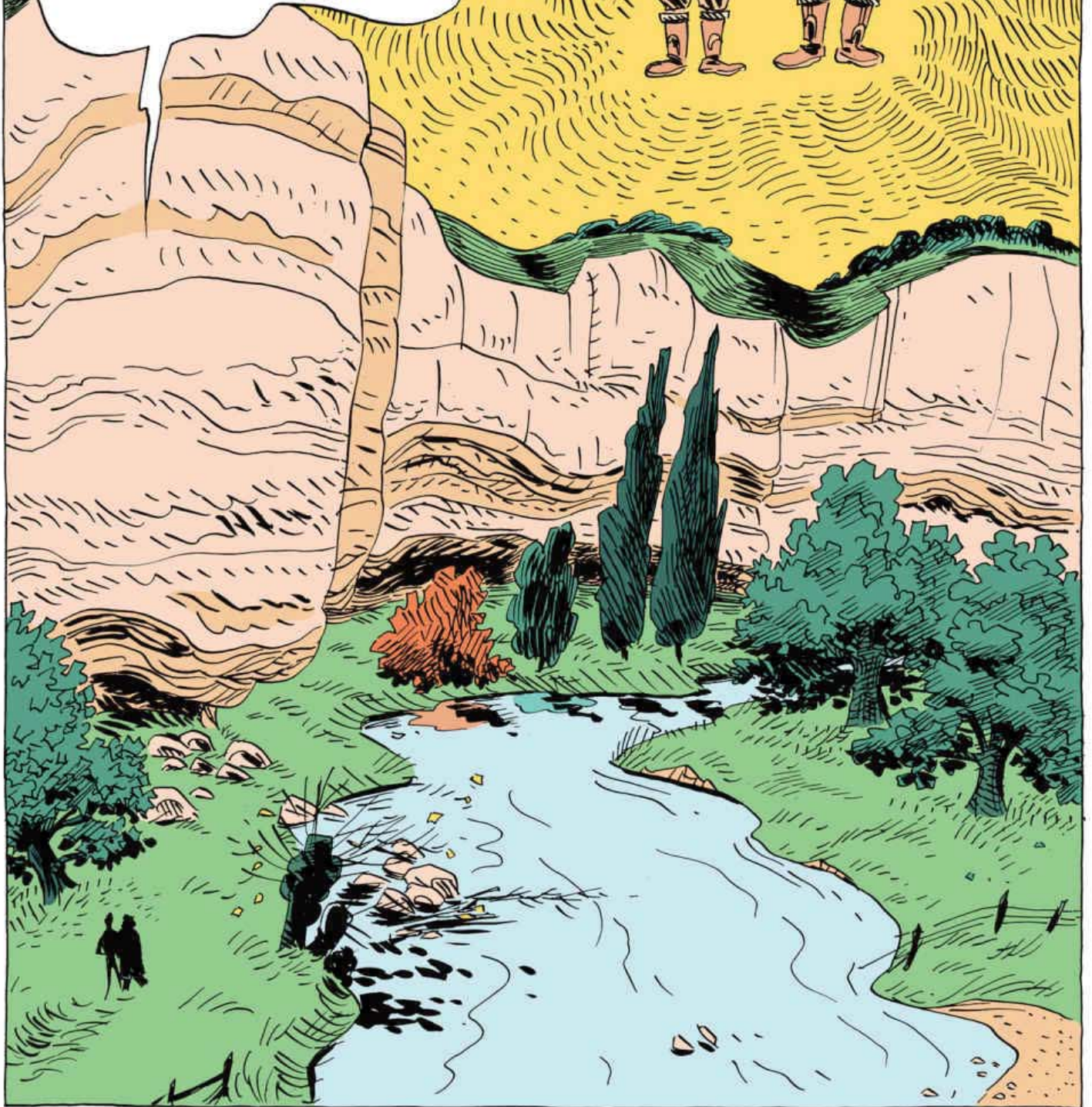
BUT THEN ALONG COMES THE THIRD THEORY, WHICH ARGUES THAT THEIR LAVISH BURIAL HAD NOTHING TO DO WITH THEIR STATUS... IT WAS ALL ABOUT HOW THEY DIED.



THEY COULD HAVE BEEN RITUALLY SACRIFICED, PERHAPS AS PART OF THE LEADER'S BURIAL RIGHTS, AND THEN GIVEN A BIG, FANCY BURIAL.



WHATEVER ACTUALLY HAPPENED, THOSE GRAVES IN SUNGIR ARE SOME OF THE BEST EVIDENCE WE HAVE ABOUT HOW SAPIENS LIVED 34,000 YEARS AGO: THEY ALREADY CONGREGATED IN LARGE TRIBES AND THEY'D COME UP WITH SOCIOPOLITICAL CODES THAT WENT WAY BEYOND THE DICTATES OF OUR DNA... AND BEYOND BEHAVIORS SEEN IN OTHER HUMAN OR ANIMAL SPECIES.



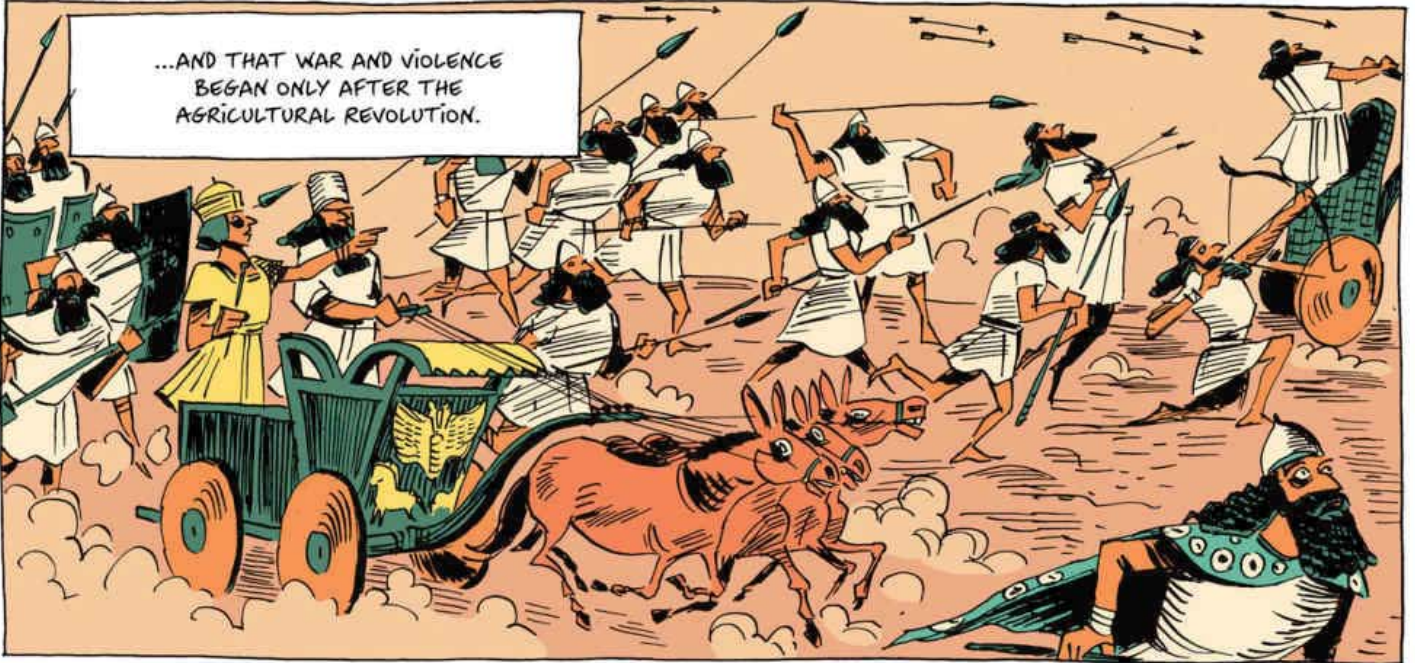
AND NOW WE COME TO THE THORNY SUBJECT OF VIOLENCE AND WAR.



SOME SPECIALISTS ARGUE THAT ANCIENT FORAGERS WERE VERY PEACEFUL...



...AND THAT WAR AND VIOLENCE BEGAN ONLY AFTER THE AGRICULTURAL REVOLUTION.



OTHERS SAY THAT THE ANCIENT FORAGERS' WORLD WAS HORRIBLY CRUEL AND VIOLENT.



BOTH SCHOOLS OF THOUGHT ARE LIKE CASTLES IN THE AIR, CONNECTED TO REALITY BY A FEW MEAGER ARCHAEOLOGICAL REMAINS AND SOME QUESTIONABLE ANTHROPOLOGICAL OBSERVATIONS.





AS PROFESSOR YOSHITA EXPLAINED SO WELL IN RIO, THE ANTHROPOLOGICAL EVIDENCE IS FASCINATING BUT, TO SAY THE LEAST, PROBLEMATIC.

AND ANYWAY, IN RECENT YEARS FORAGERS HAVE BEEN INCREASINGLY POLICED BY THE AUTHORITY OF MODERN STATES THAT PREVENT ANY LARGE-SCALE CONFLICTS.



MODERN DAY FORAGERS MOSTLY LIVE IN ISOLATED, INHOSPITABLE AREAS LIKE THE ARCTIC OR THE KALAHARI, PLACES WITH VERY LOW POPULATION DENSITY AND LIMITED OPPORTUNITIES FOR FIGHTING OTHER PEOPLE.

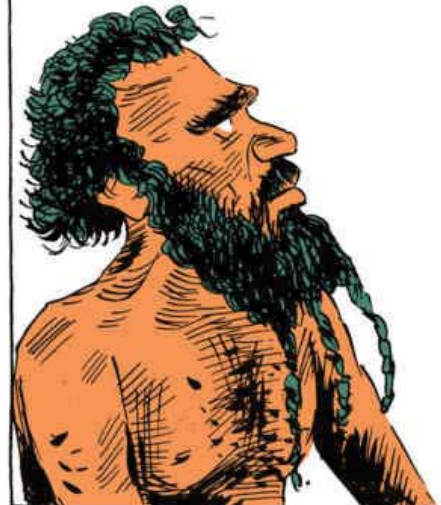
MODERN DAY SCHOLARS HAVE HAD ONLY TWO OPPORTUNITIES TO OBSERVE LARGE, RELATIVELY DENSE POPULATIONS OF INDEPENDENT FORAGERS...



IN NORTHWESTERN NORTH AMERICA IN THE 19TH CENTURY...



AND IN NORTHERN AUSTRALIA IN THE 19TH AND EARLY 20TH CENTURY.

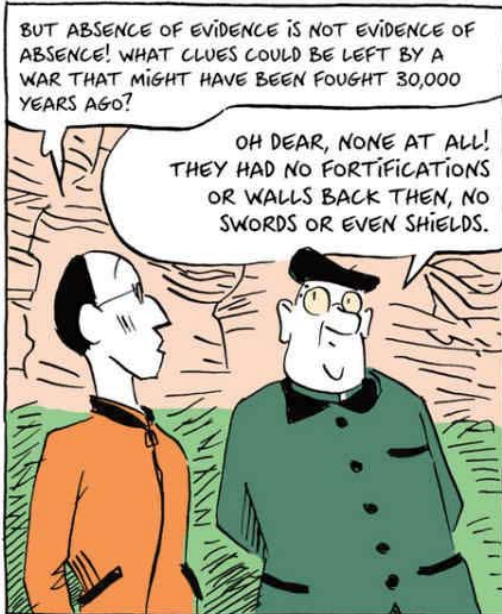
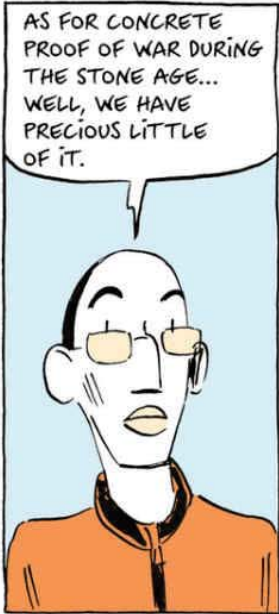


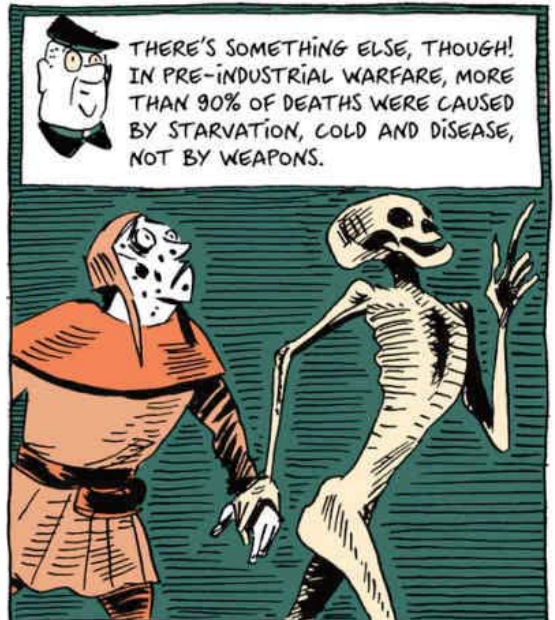
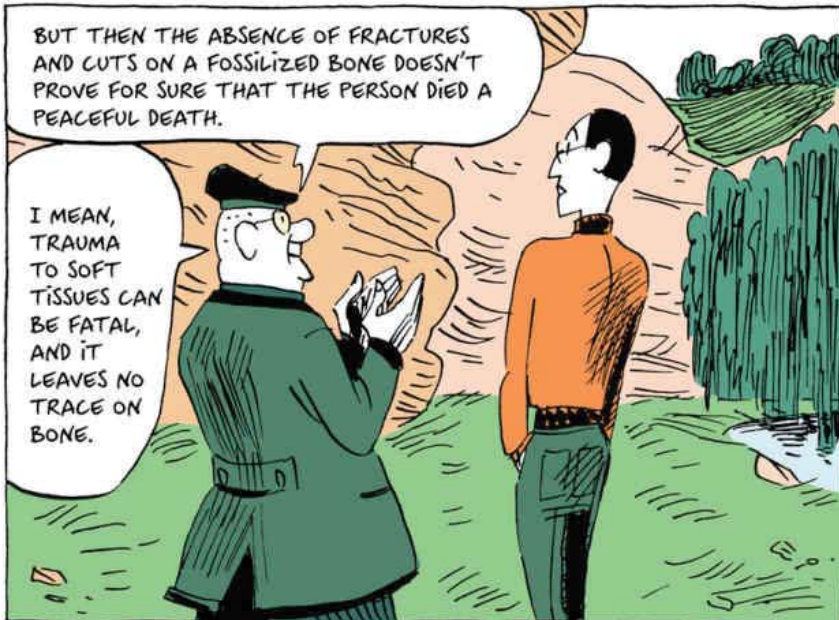
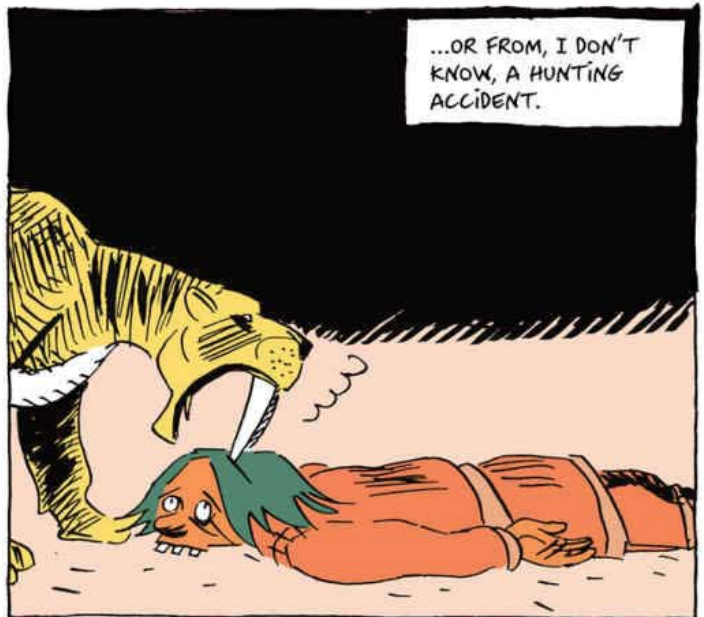
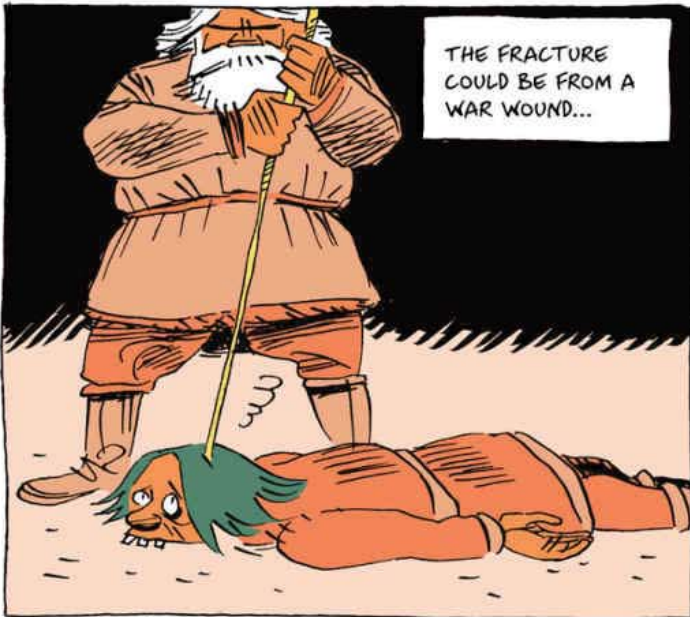
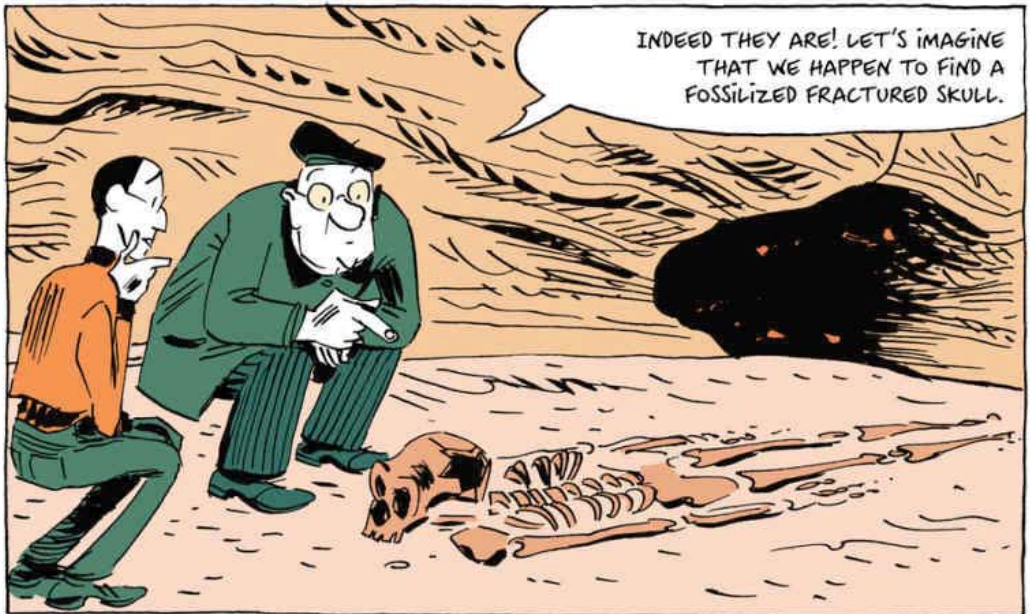
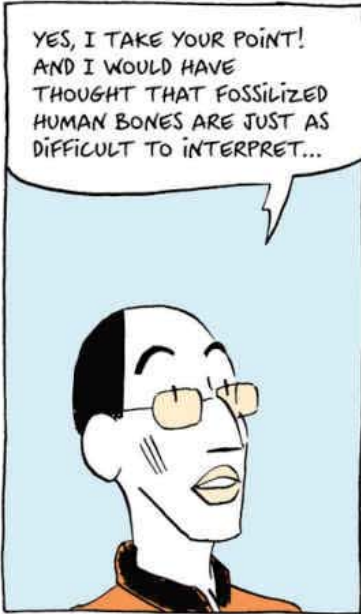
IN BOTH INSTANCES, THERE WERE FREQUENT ARMED CONFLICTS... BUT HOW MUCH OF THE BIGGER PICTURE CAN WE DEDUCE FROM JUST TWO CASES?



BESIDES, BOTH THE AMERINDIANS AND THE ABORIGINAL AUSTRALIANS WERE INFLUENCED AND PRESSURED BY EUROPEAN INVADERS. SO, YOU NEVER KNOW, MAYBE THEIR VIOLENCE WAS A RESULT OF EUROPEAN IMPERIALISM.

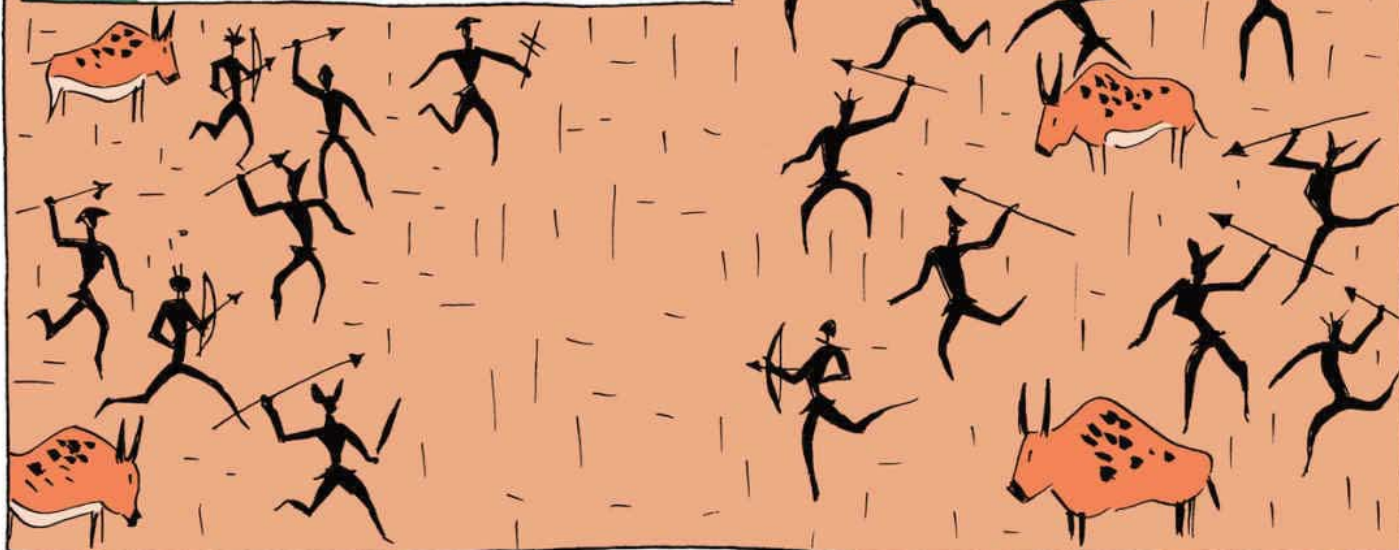








IMAGINE A SCENE 30,000 YEARS AGO, WITH ONE TRIBE DEFEATING THEIR NEIGHBORS AND DRIVING THEM OUT OF VALUABLE FORAGING GROUNDS.



LET'S SAY THAT TEN MEMBERS OF THE DEFEATED TRIBE ARE KILLED IN THE DECISIVE BATTLE.



THE NEXT YEAR ANOTHER HUNDRED MEMBERS OF THE DEFEATED TRIBE THEN DIE OF HUNGER, COLD OR DISEASE.

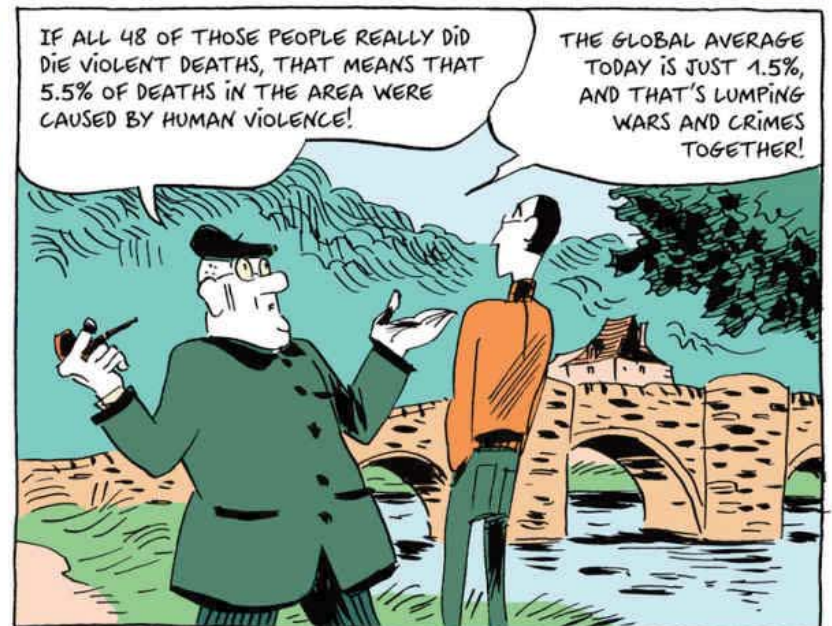
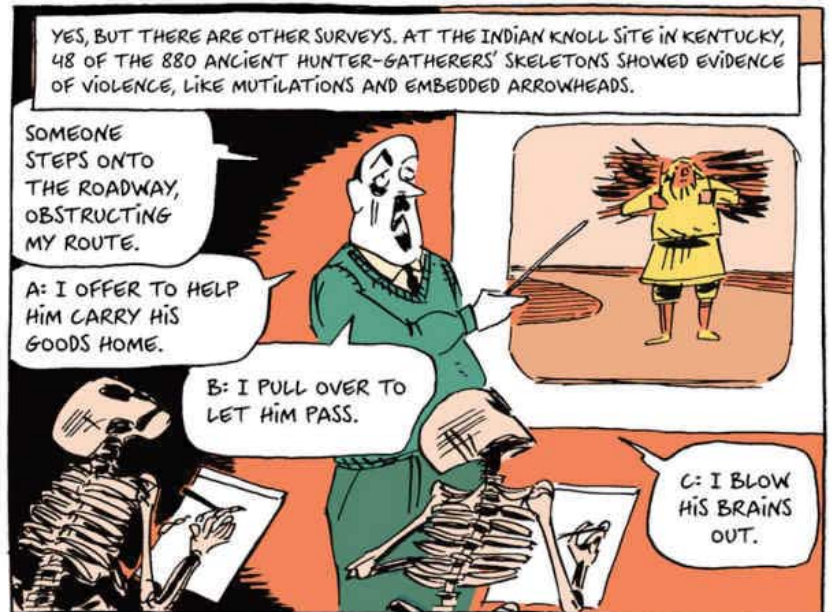
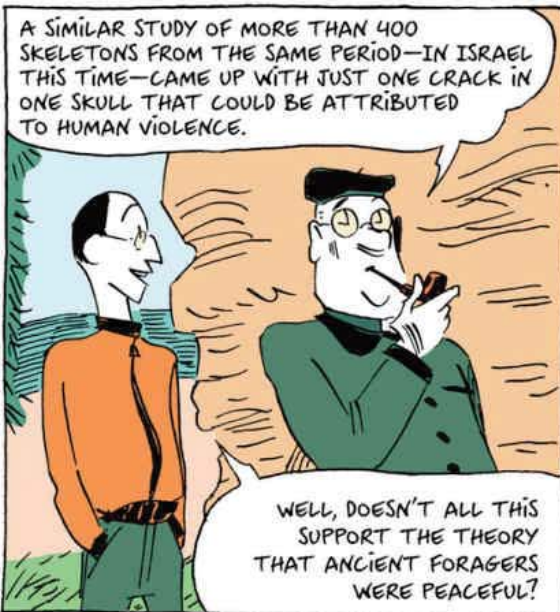
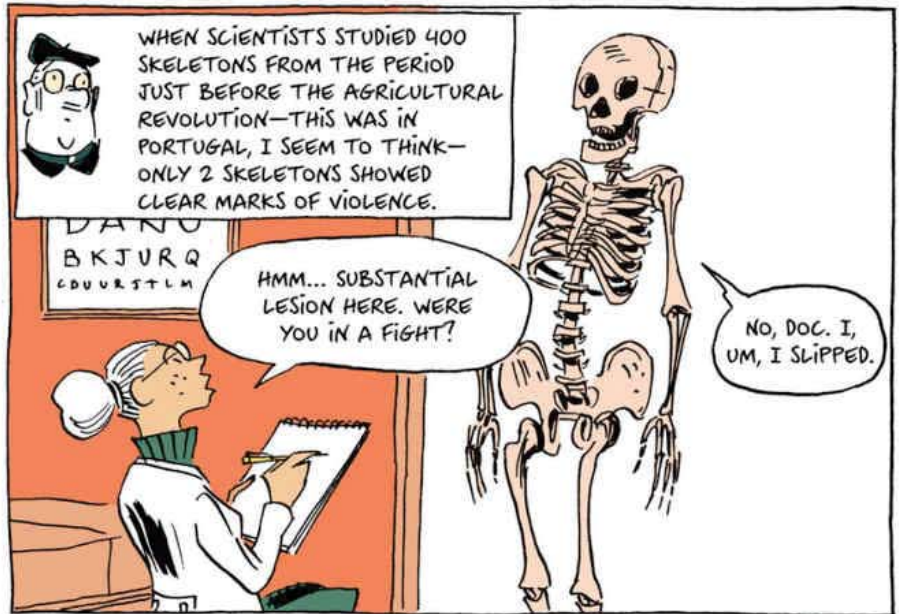
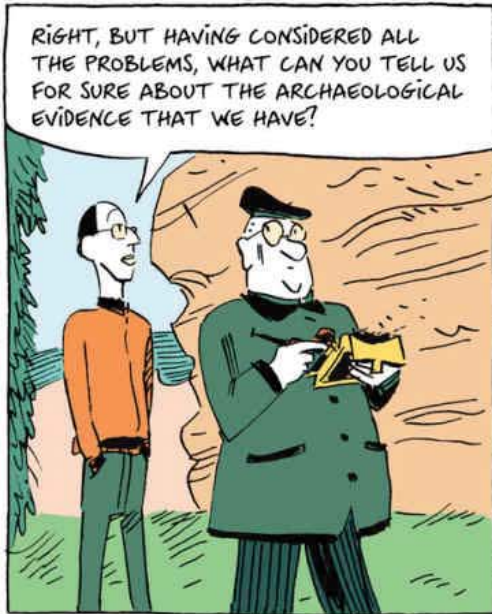


EVEN IF BY SOME MIRACLE ARCHAEOLOGISTS FIND ALL 110 SKELETONS, THEY MIGHT WRONGLY CONCLUDE THAT ONLY 10% OF THOSE PEOPLE WERE KILLED BY WAR.



HOW COULD WE KNOW THAT ALL OF THEM WERE ACTUALLY VICTIMS OF A MERCILESS CONFLICT?







IN THE 20TH CENTURY—AND LET'S BE HONEST, IT SAW THE BLOODIEST WARS AND MOST MASSIVE GENOCIDES IN HISTORY—ONLY 5% OF HUMAN DEATHS RESULTED FROM HUMAN VIOLENCE.

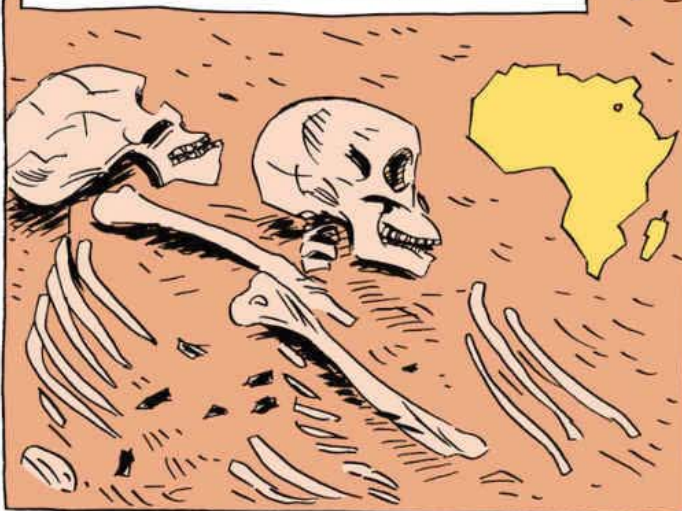


SO ANCIENT KENTUCKY MAY WELL HAVE BEEN AS VIOLENT AS THE 20TH CENTURY!



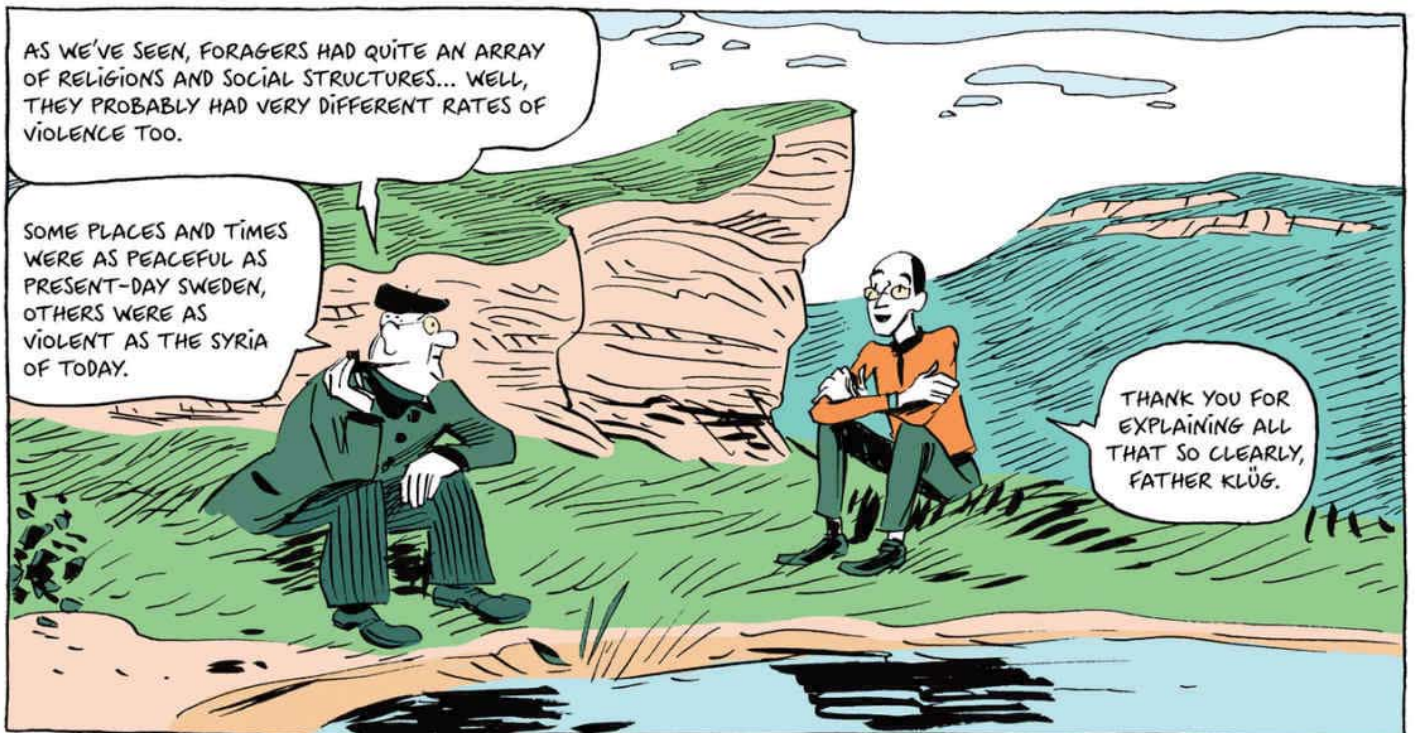
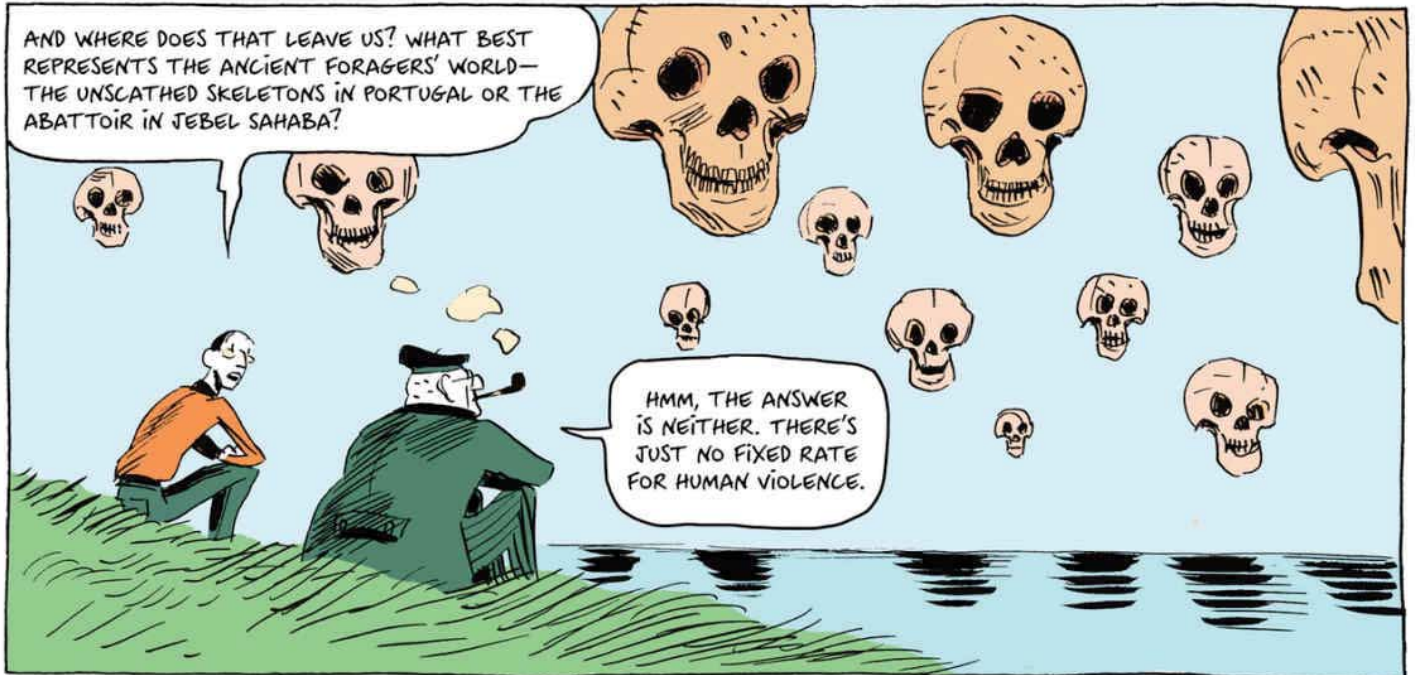
AT JEBEL SAHABA IN SUDAN, A 12,000-YEAR-OLD CEMETERY WITH 59 SKELETONS WAS FOUND.

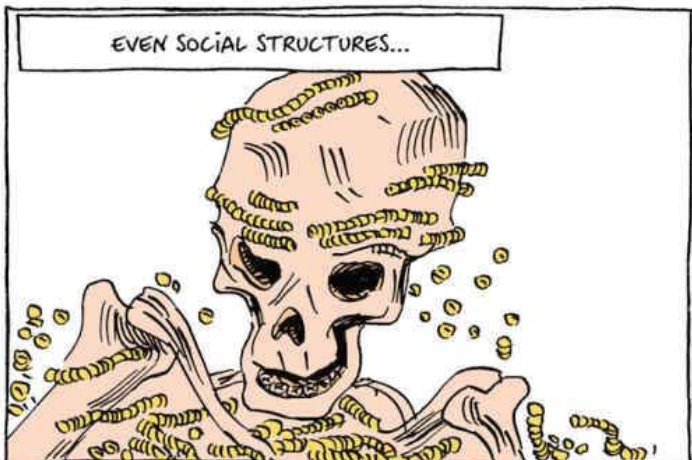
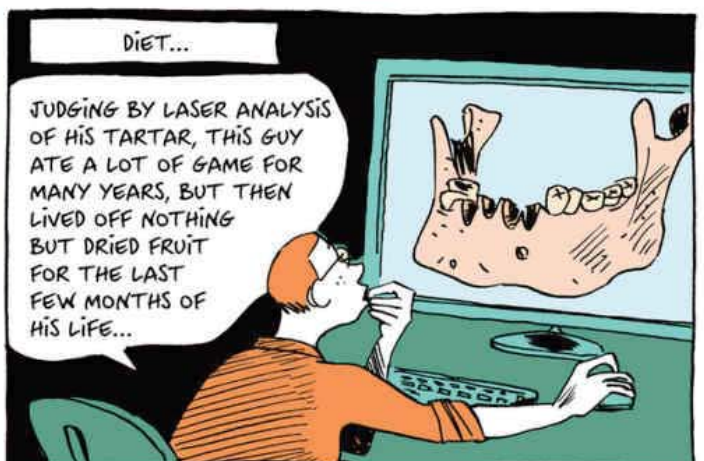
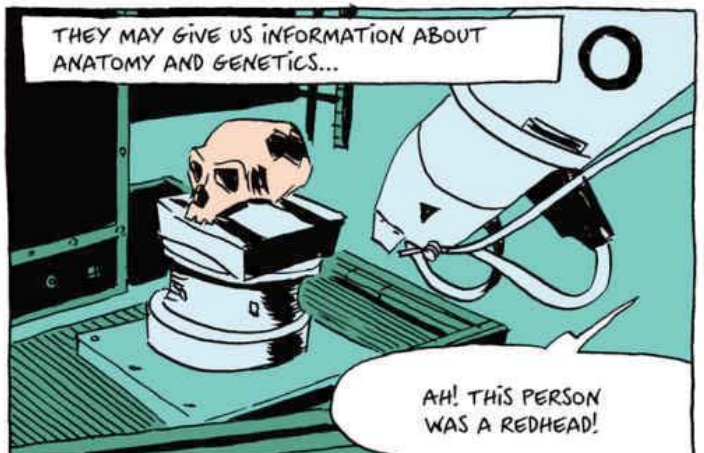
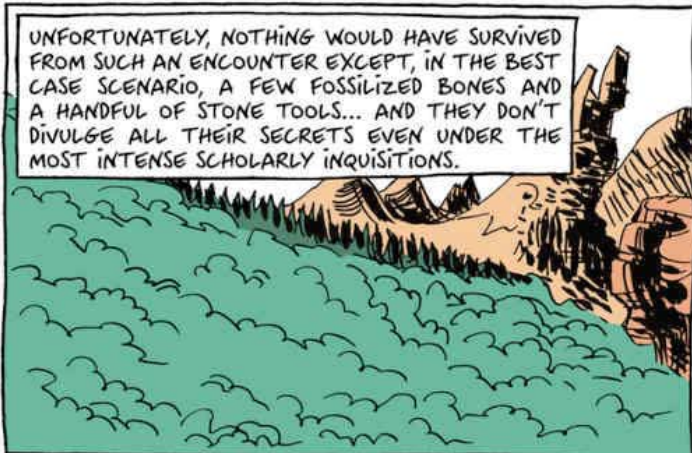
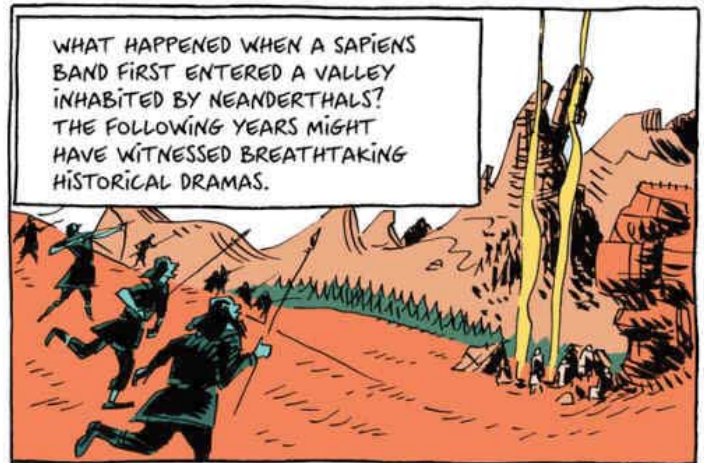
24 OF THEM—THAT'S A HUGE 40%—SHOW SIGNS OF VIOLENCE, LIKE SKULL FRACTURES OR BONES WITH EMBEDDED STONE SPEARHEADS.

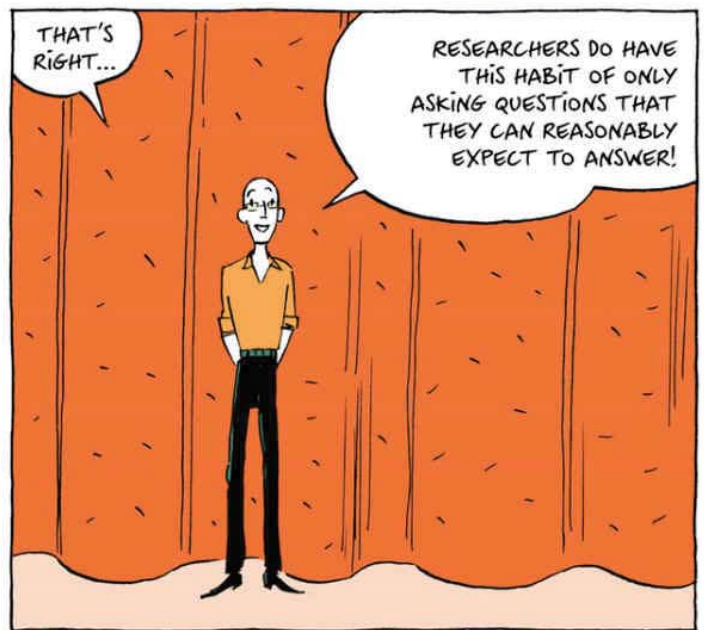
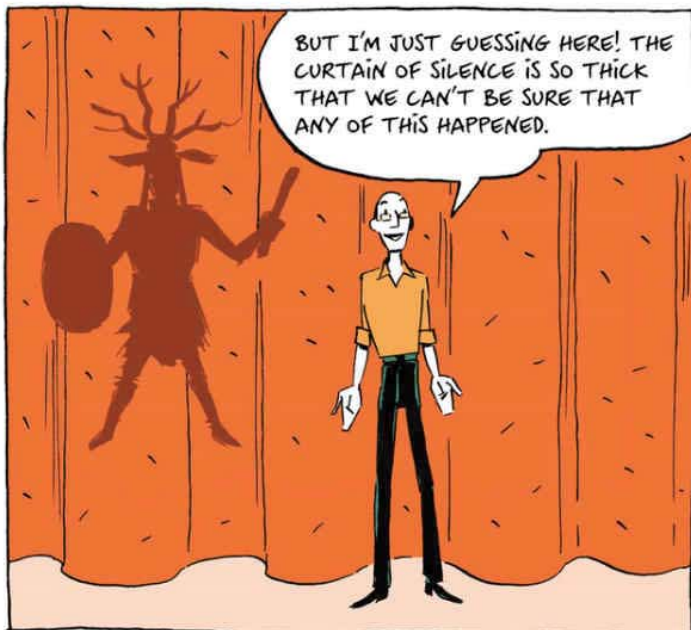
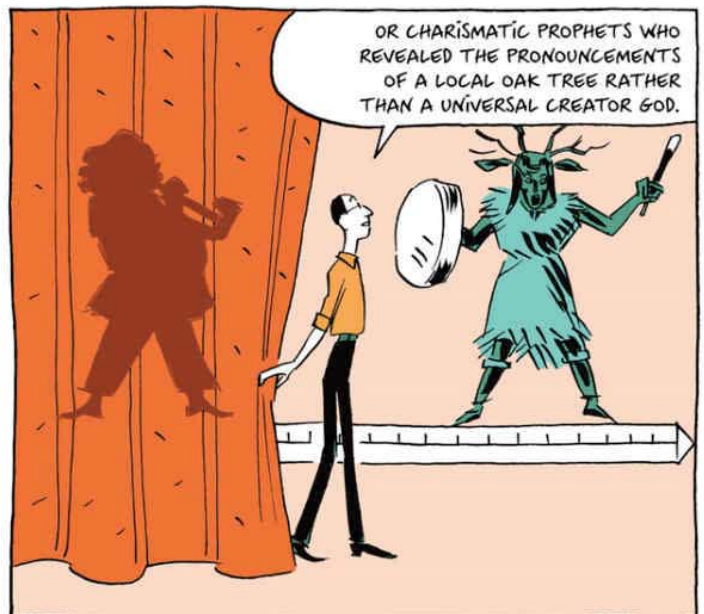
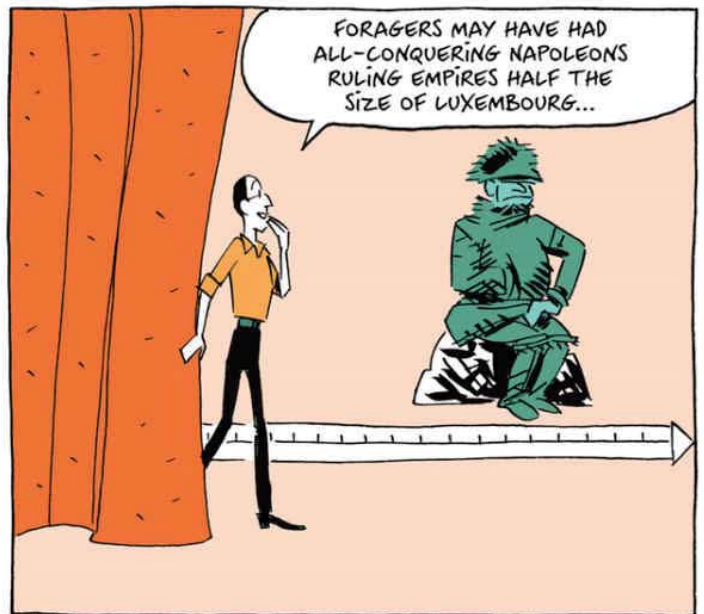
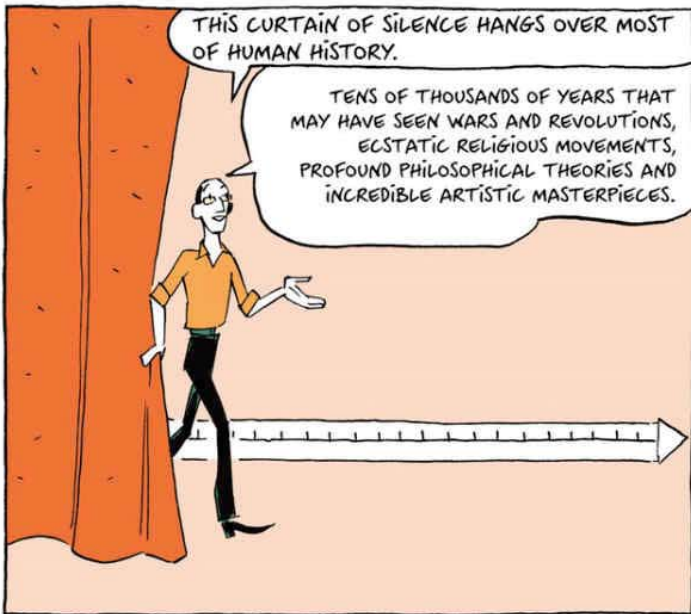


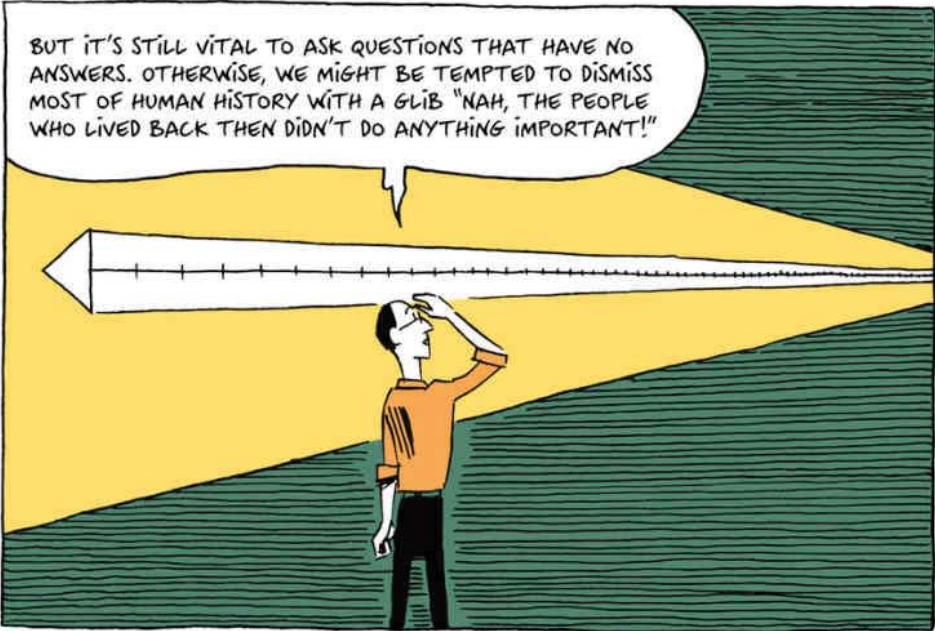
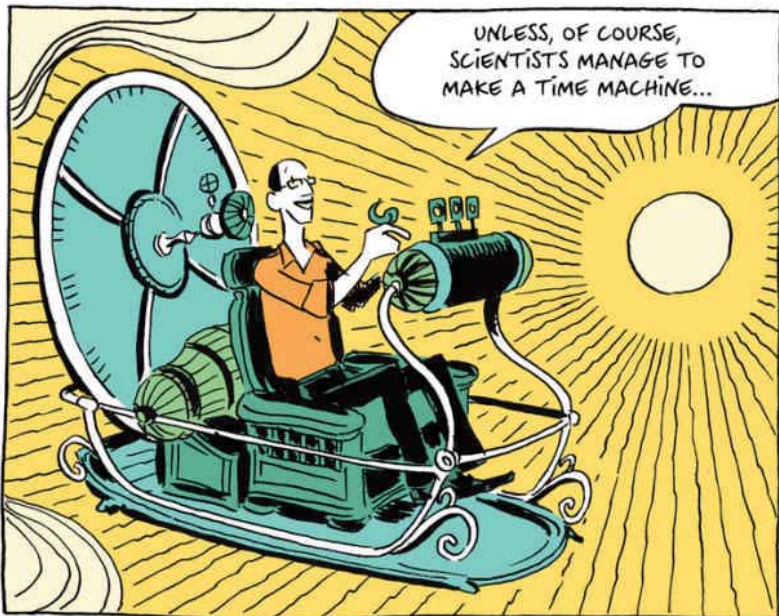
THE MOST ANCIENT SITE IN EUROPE WITH CLEAR EVIDENCE OF WAR IS A CEMETERY NEAR THE RIVER DNIEPER, IN UKRAINE, THAT DATES FROM 12,000 YEARS AGO. 5 OF THE 19 PEOPLE BURIED THERE SEEM TO HAVE COME TO A VIOLENT END.







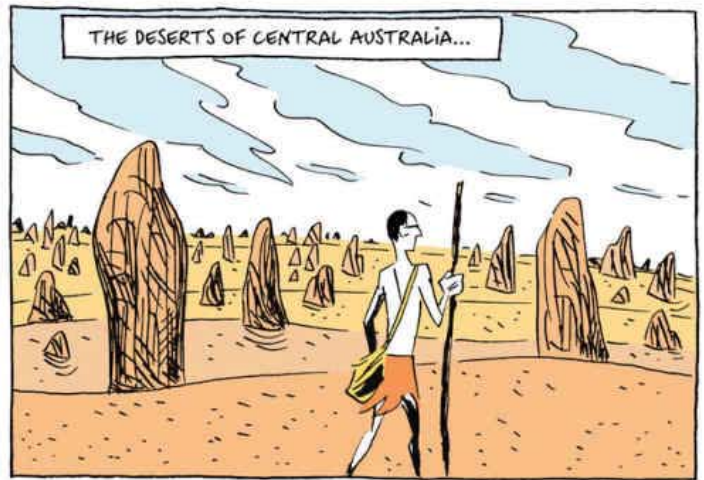




TREKKERS VISITING THE
SIBERIAN TUNDRA...



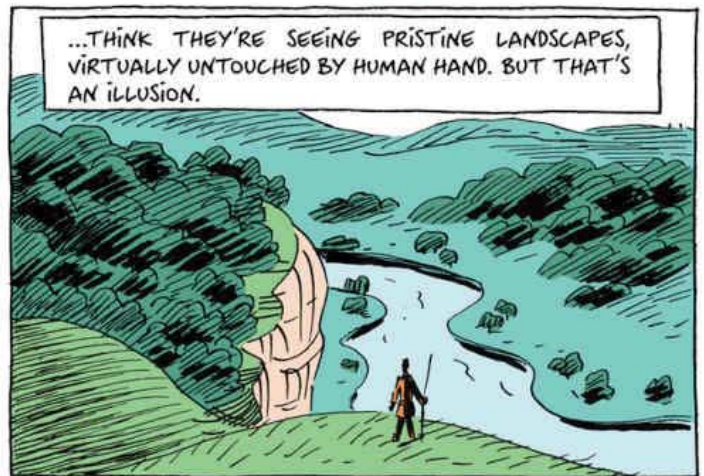
THE DESERTS OF CENTRAL AUSTRALIA...



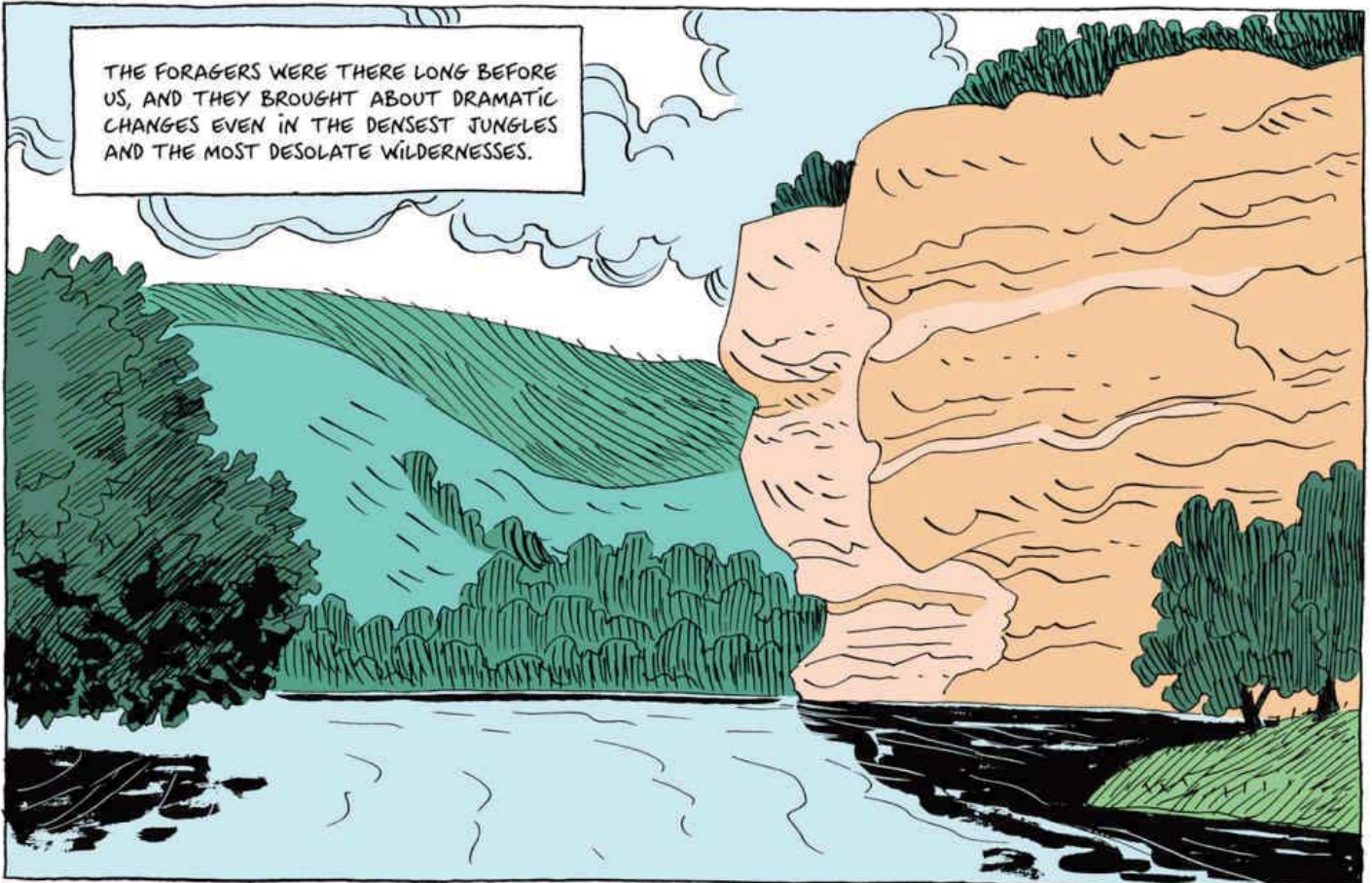
...AND THE AMAZONIAN
RAINFOREST...



...THINK THEY'RE SEEING PRISTINE LANDSCAPES,
VIRTUALLY UNTOUCHED BY HUMAN HAND. BUT THAT'S
AN ILLUSION.



THE FORAGERS WERE THERE LONG BEFORE
US, AND THEY BROUGHT ABOUT DRAMATIC
CHANGES EVEN IN THE DENSEST JUNGLES
AND THE MOST DESOLATE WILDERNESSES.



UP
NEXT IN
SAPiENS!

WHO WAS THE DEADLIEST SERIAL
KILLER THAT THE ANIMAL
KINGDOM HAS EVER PRODUCED?



FIND OUT IN THE NEXT CHAPTER, WHICH WILL ALSO EXPLAIN HOW ANCIENT FORAGERS COMPLETELY RESTRUCTURED OUR PLANET'S ECOLOGY LONG BEFORE THE FIRST FARMING VILLAGE WAS EVEN BUILT!

INTERCONTINENTAL SERIAL KILLERS



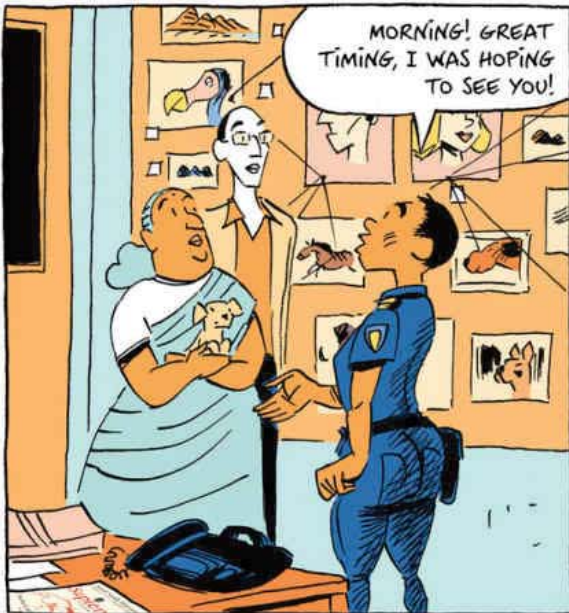


THE PROFILERS ARE HERE,
DETECTIVE LOPEZ.

SHOW 'EM IN!



COME ON IN.



MORNING! GREAT
TIMING, I WAS HOPING
TO SEE YOU!



THANK YOU, BUT I THINK THERE'S BEEN
A MISTAKE... PROFESSOR HARARI AND
I AREN'T PROFILERS AT ALL AND
I'M AFRAID...



OK, OK, I KNOW, I WAS
EXPECTING YOU.

THANKS FOR COMING,
PROFESSOR.

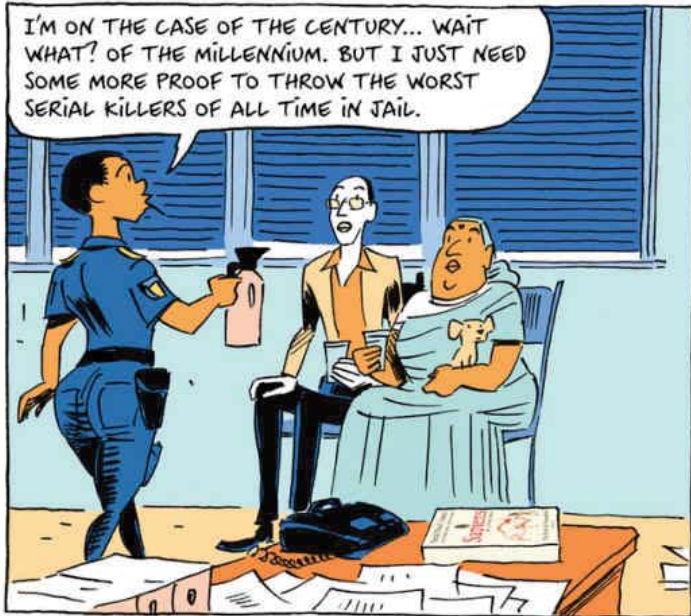


PROFILER'S JUST THE WORD IN OUR LINGO. WHAT I REALLY
NEED IS YOUR EXPERTISE TO KICK MY INQUIRY INTO SHAPE...

YOU WANT TEA?
COFFEE?

UHM...TEA,
THANKS.

AH! THERE'S MY
LICORICE STICK! HELL, I
MISS MY CIGARETTES.

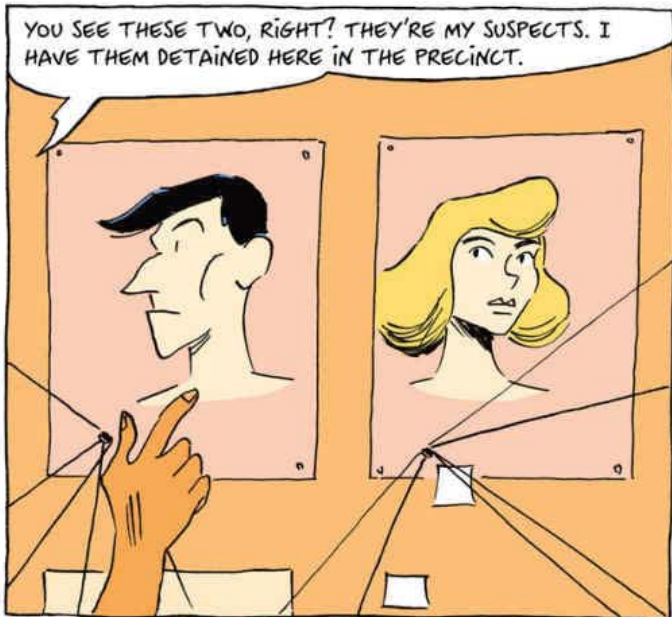


I'M ON THE CASE OF THE CENTURY... WAIT WHAT? OF THE MILLENNIUM. BUT I JUST NEED SOME MORE PROOF TO THROW THE WORST SERIAL KILLERS OF ALL TIME IN JAIL.

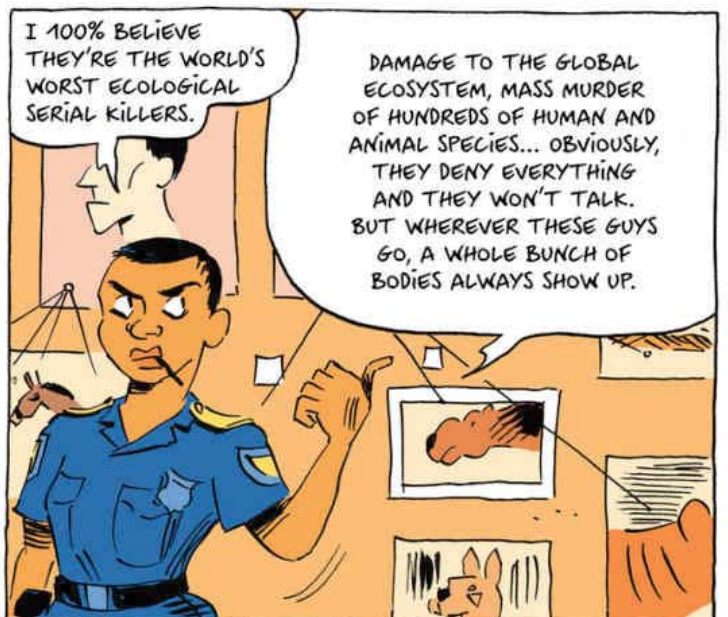


IS THAT ALL? AND YOU'RE SURE WE'RE...

SURE I'M SURE. YOU'LL SEE.

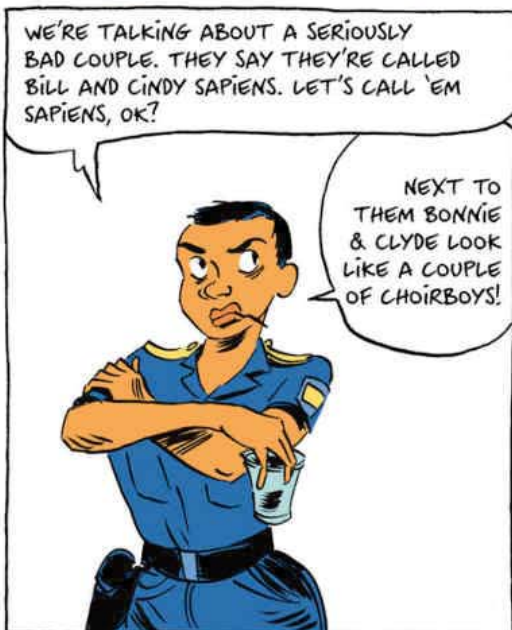


YOU SEE THESE TWO, RIGHT? THEY'RE MY SUSPECTS. I HAVE THEM DETAINED HERE IN THE PRECINCT.



I 100% BELIEVE THEY'RE THE WORLD'S WORST ECOLOGICAL SERIAL KILLERS.

DAMAGE TO THE GLOBAL ECOSYSTEM, MASS MURDER OF HUNDREDS OF HUMAN AND ANIMAL SPECIES... OBVIOUSLY, THEY DENY EVERYTHING AND THEY WON'T TALK. BUT WHEREVER THESE GUYS GO, A WHOLE BUNCH OF BODIES ALWAYS SHOW UP.



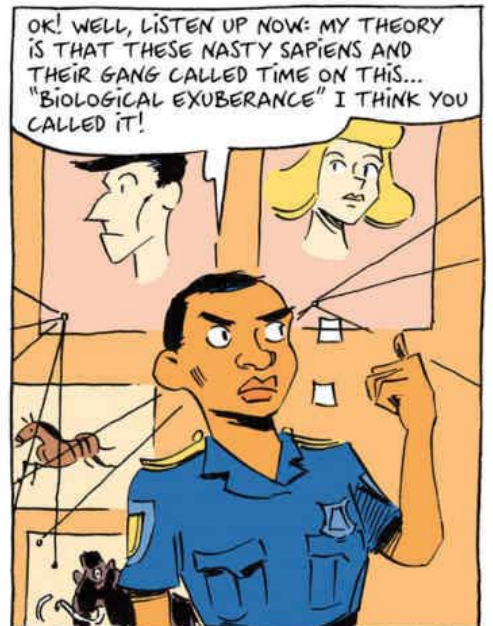
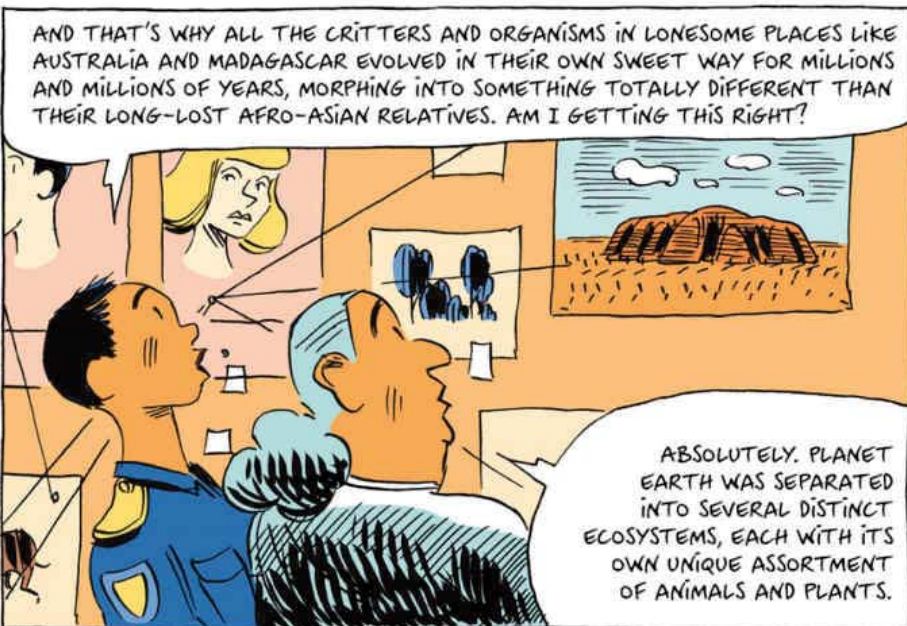
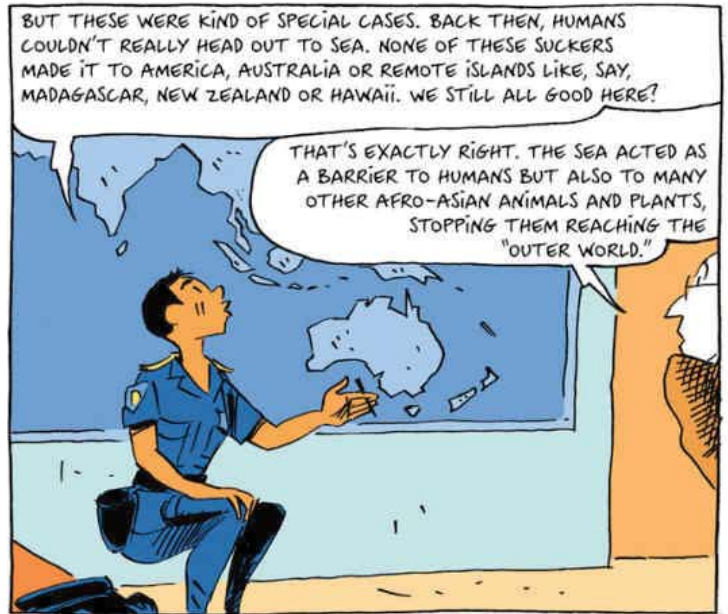
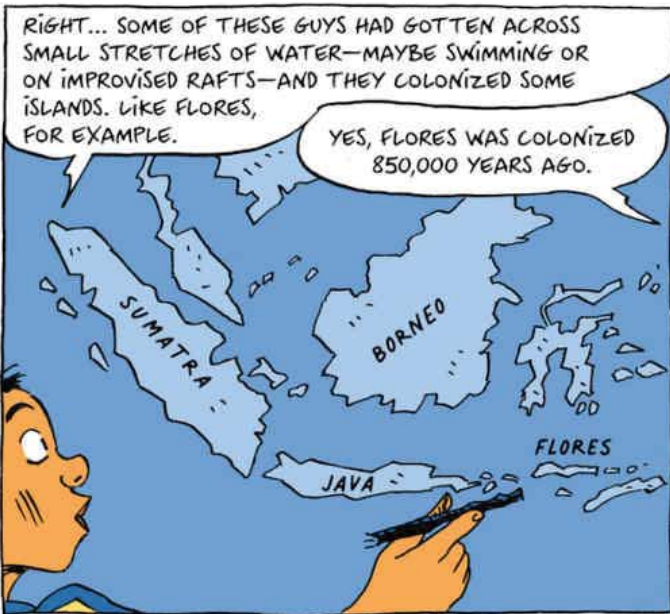
WE'RE TALKING ABOUT A SERIOUSLY BAD COUPLE. THEY SAY THEY'RE CALLED BILL AND CINDY SAPIENS. LET'S CALL 'EM SAPIENS, OK?

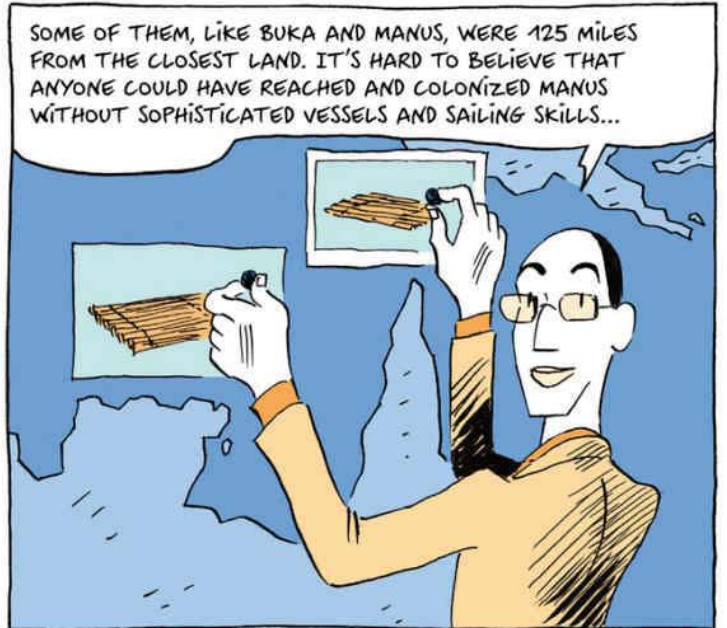
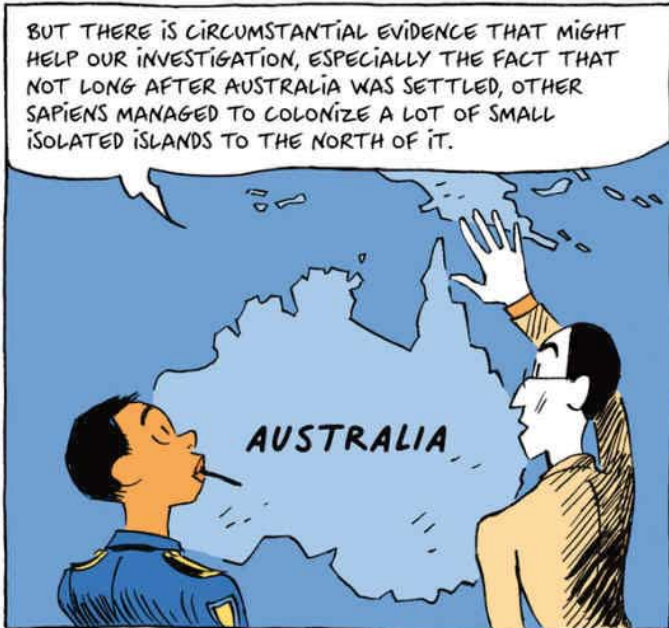
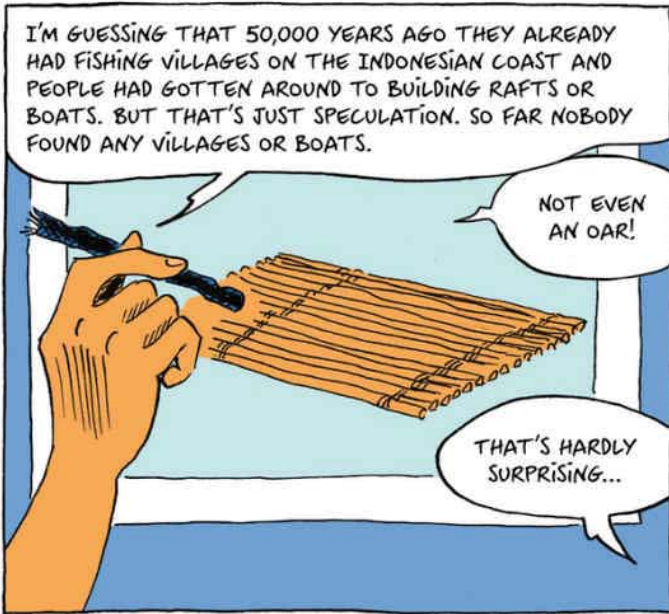
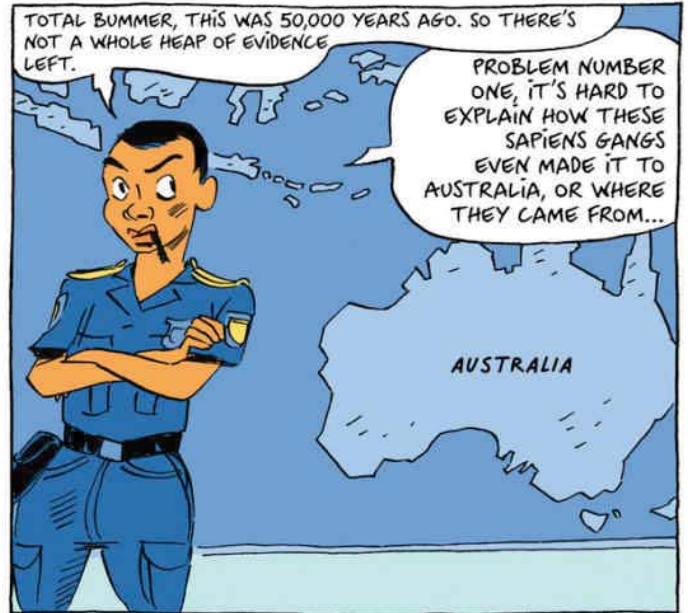
NEXT TO THEM BONNIE & CLYDE LOOK LIKE A COUPLE OF CHOIRBOYS!

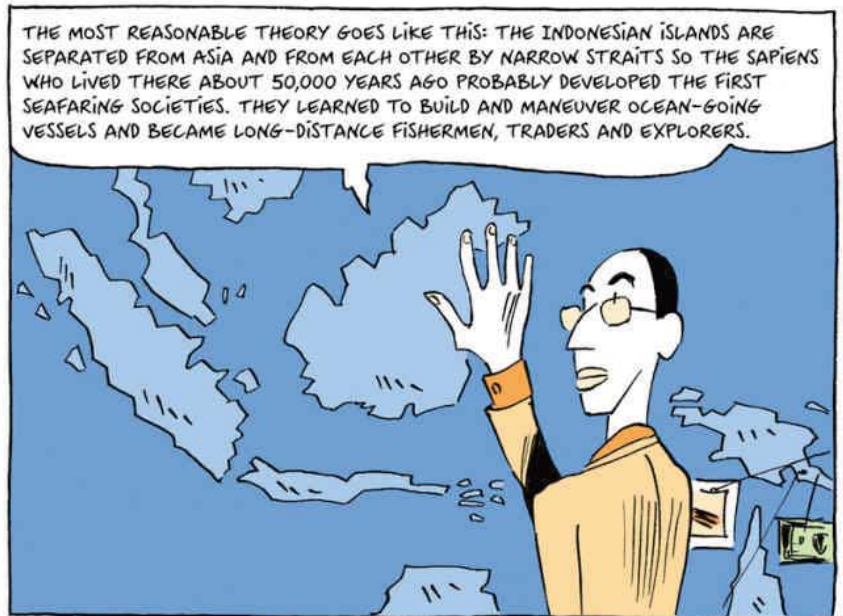
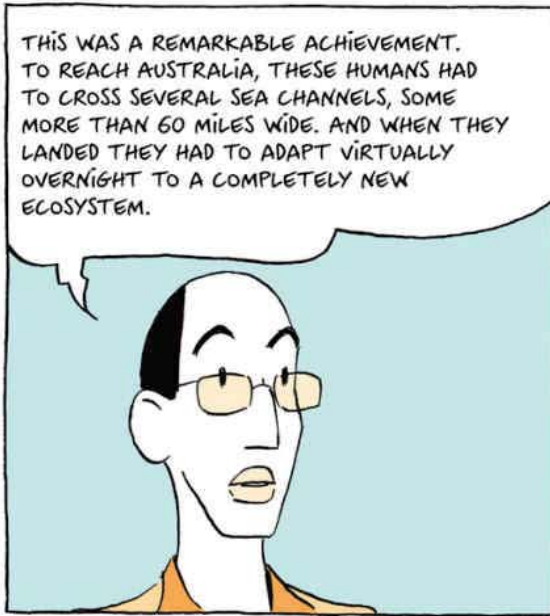
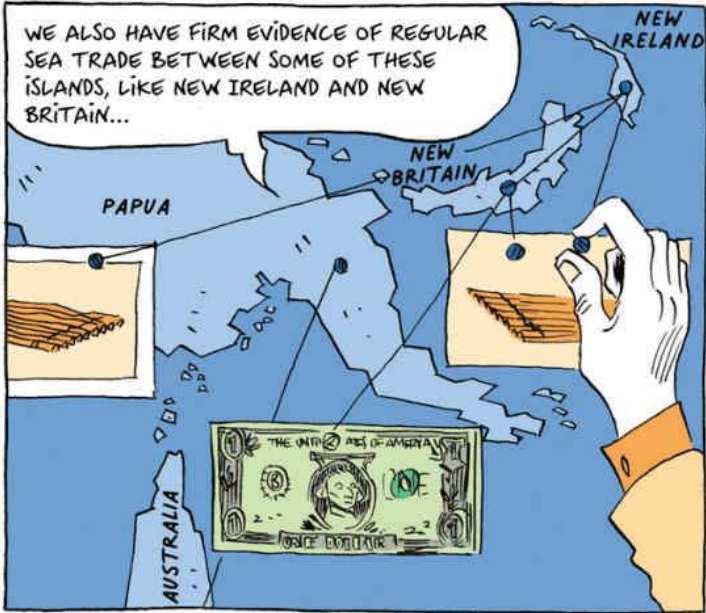


YES, I'VE HEARD OF THEM. BUT UM... DO YOU REALLY THINK THESE TWO PEOPLE COULD HAVE DONE EVERYTHING YOU SAY ON THEIR OWN?


OBVIOUSLY NOT. THEY'RE PART OF A HUGE CRIMINAL RING OF ORGANIZED GANGS. BUT THEY'RE THE ONLY TWO I GOT IN THE SLAMMER. IF I CAN GET THEM TO SING, THEY'LL LEAD ME TO THE OTHERS.







AND THIS TRANSFORMATION HAPPENED INCREDIBLY QUICKLY. ALL THE OTHER MAMMALS THAT WENT TO SEA—LIKE SEALS, SEA COWS AND WHALES—HAD TO EVOLVE FOR MILLIONS OF YEARS TO DEVELOP SPECIALIZED ORGANS AND HYDRODYNAMIC BODIES.



BUT THOSE SAPIENS IN INDONESIA, THOSE DESCENDANTS OF APES FROM THE AFRICAN SAVANNA, BECAME PACIFIC SEAFARERS WITHOUT GROWING FLIPPERS OR WAITING FOR THEIR NOSES TO MIGRATE TO THE TOP OF THEIR HEADS LIKE A WHALE!

WOOF!
WOOF!
WOOF!




I GET THE PICTURE... THESE SCUMBAGS DID SOMETHING REALLY SPECIAL, HUH?



SOMETHING BEYOND INCREDIBLE! THE FIRST HUMAN JOURNEY TO AUSTRALIA IS ONE OF THE MOST IMPORTANT EVENTS IN HISTORY, AT LEAST AS IMPORTANT AS COLUMBUS'S VOYAGE TO AMERICA OR THE APOLLO 11 EXPEDITION TO THE MOON!



IT WAS THE FIRST TIME A HUMAN HAD MANAGED TO LEAVE THE AFRO-ASIAN ECOLOGICAL SYSTEM. THE FIRST TIME ANY LARGE TERRESTRIAL MAMMAL MADE IT FROM AFRO-ASIA TO AUSTRALIA!



BUT WHAT OUR SCUMBAGS DID WHEN THEY REACHED THIS NEW WORLD WAS WAY MORE IMPORTANT!

COME WITH ME, YOU GOTTA MEET THESE GUYS!



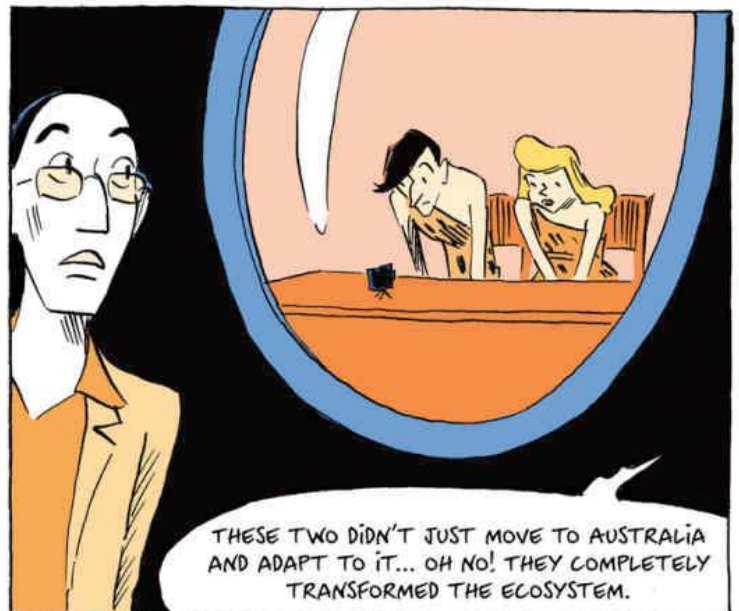
THE MINUTE THEY SET FOOT ON AN AUSTRALIAN BEACH, THESE HUSTLERS CLIMBED RIGHT TO THE TOP OF THE FOOD CHAIN. ALPHA DOGS! NUMERO UNO! CAPO DI TUTTI CAPI! PLANET EARTH WAS IN SHOCK.



YES, UP UNTIL THEN HUMANS HAD SHOWN SOME PRETTY INNOVATIVE ADAPTATIONS AND BEHAVIORS, BUT THEY'D HAD A NEGLIGIBLE EFFECT ON THEIR ENVIRONMENT. THEY'D BEEN REMARKABLY SUCCESSFUL AT MOVING INTO AND ADJUSTING TO NEW HABITATS... BUT WITHOUT DRASTICALLY CHANGING THEM.



HERE, TAKE A PEEK, THEY'RE IN THERE.



THESE TWO DIDN'T JUST MOVE TO AUSTRALIA AND ADAPT TO IT... OH NO! THEY COMPLETELY TRANSFORMED THE ECOSYSTEM.

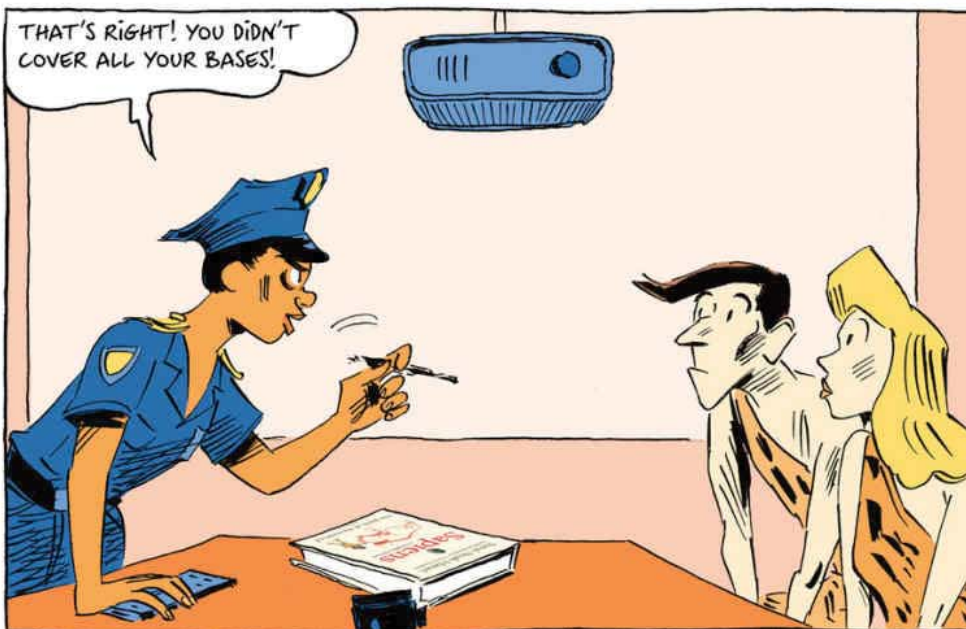
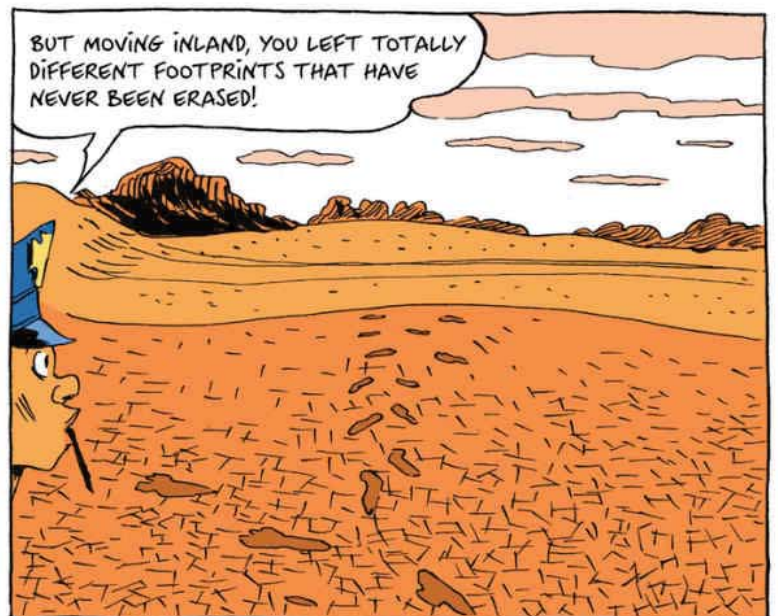
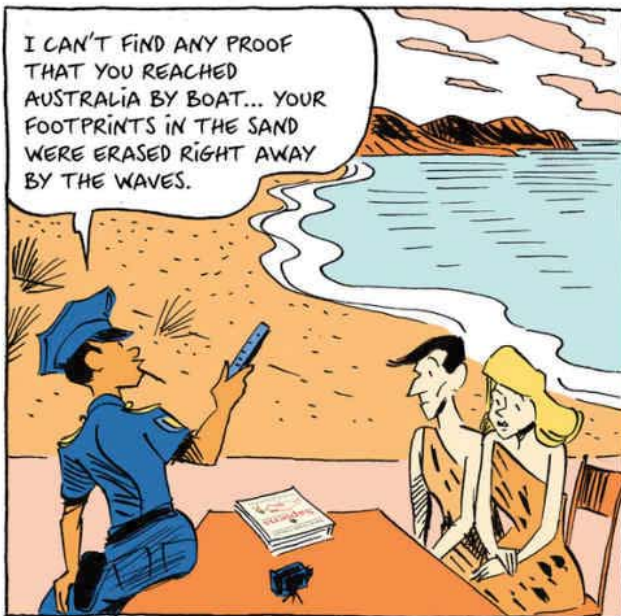
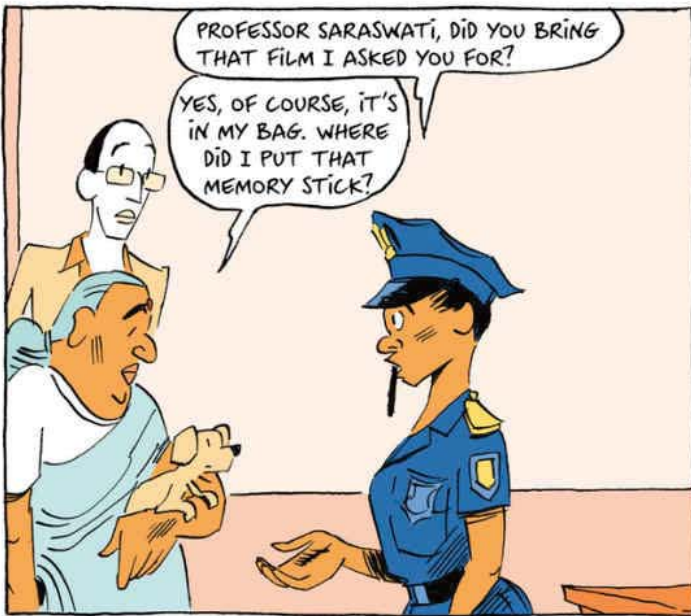
SO, I'M GUESSING YOU STILL DON'T WANNA COOPERATE...



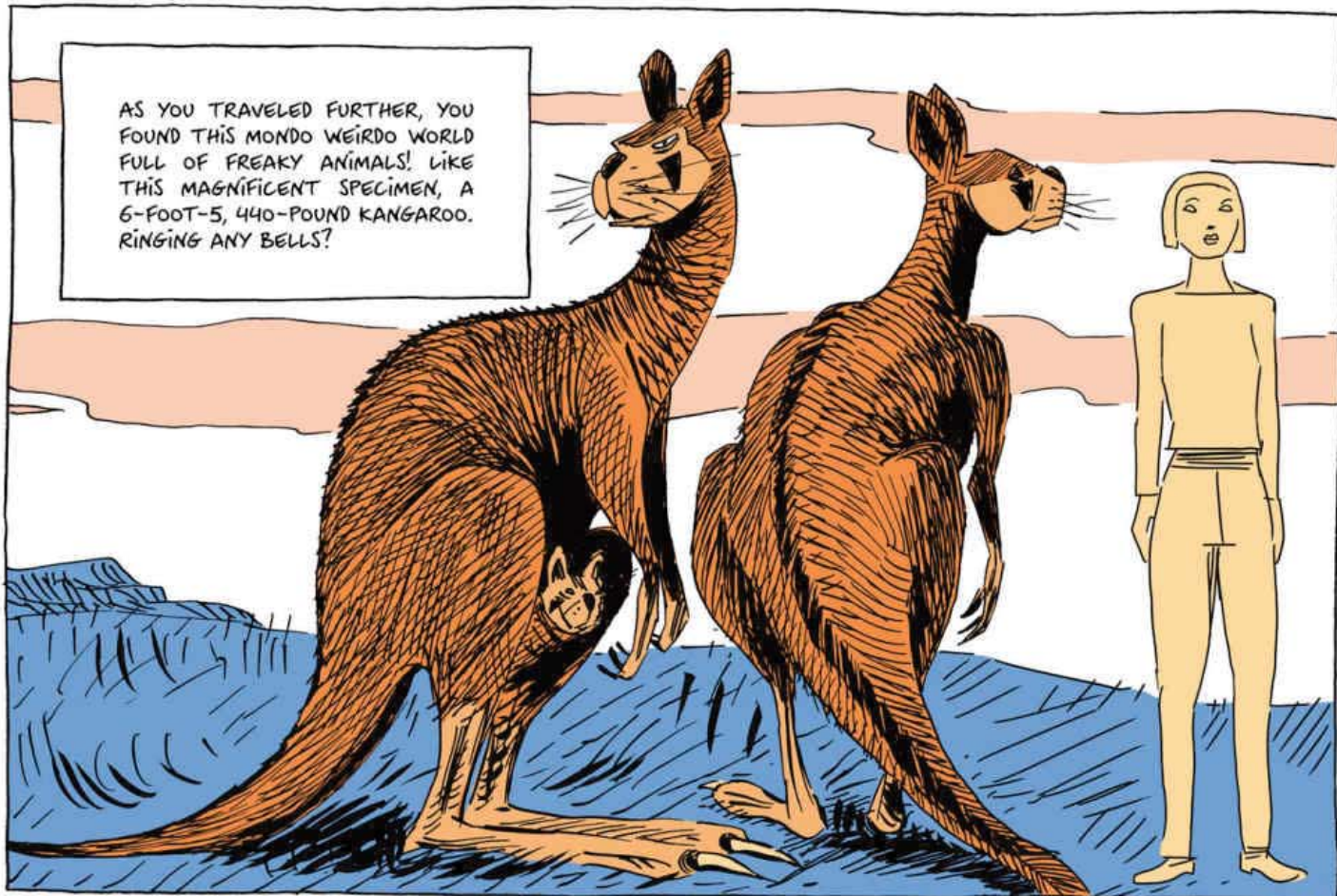
STILL NOT TALKING? WHAT ELSE IS NEW?

LOOK GUYS, THINGS AIN'T LOOKING TOO PRETTY FOR YOU.

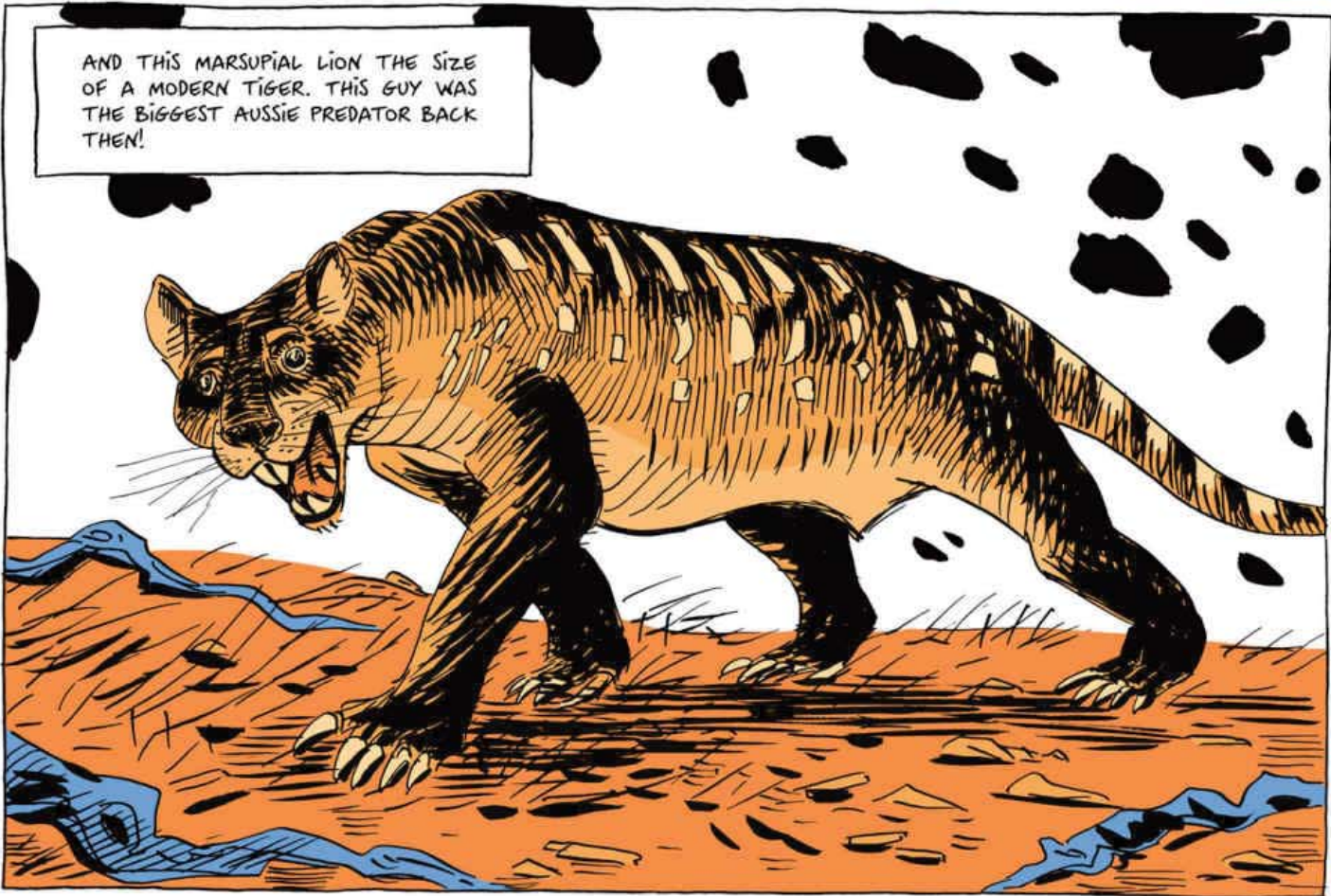




AS YOU TRAVELED FURTHER, YOU FOUND THIS MONDO WEIRDO WORLD FULL OF FREAKY ANIMALS! LIKE THIS MAGNIFICENT SPECIMEN, A 6-FOOT-5, 440-POUND KANGAROO. RINGING ANY BELLS?



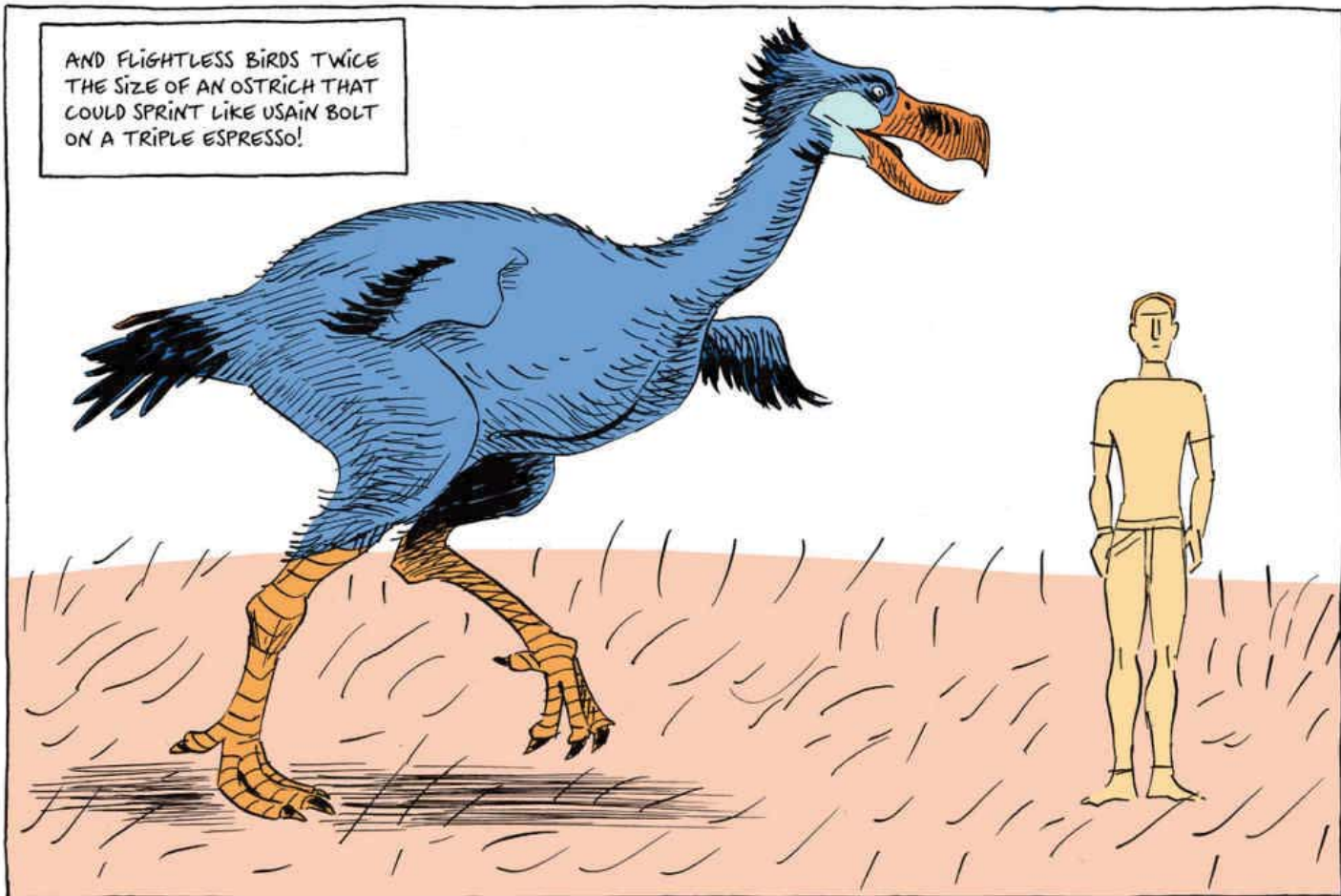
AND THIS MARSUPIAL LION THE SIZE OF A MODERN TIGER. THIS GUY WAS THE BIGGEST AUSSIE PREDATOR BACK THEN!



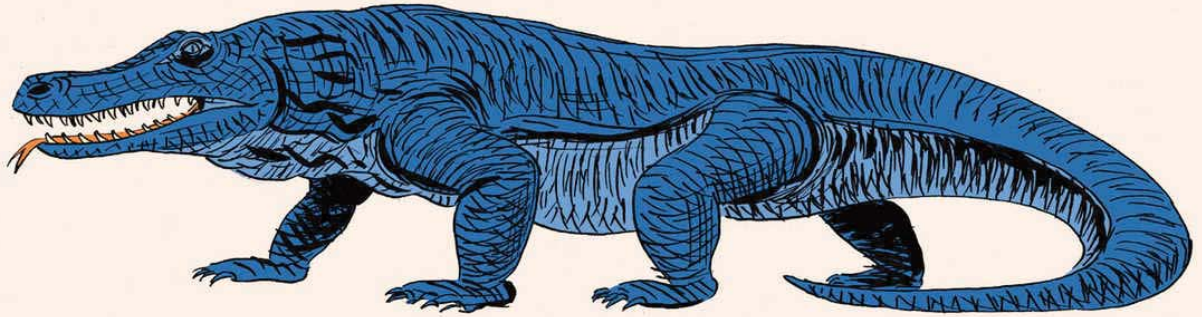
PLUS THERE WERE KOALAS WAY
TOO BIG TO BE CUDDLY AND
CUTE...



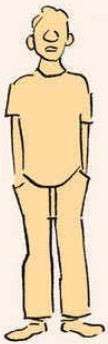
AND FLIGHTLESS BIRDS TWICE
THE SIZE OF AN OSTRICH THAT
COULD SPRINT LIKE USAIN BOLT
ON A TRIPLE ESPRESSO!



DRAGON-LIZARD THINGS AND 16-FOOT SNAKES HUNG OUT IN THE UNDERGROWTH.



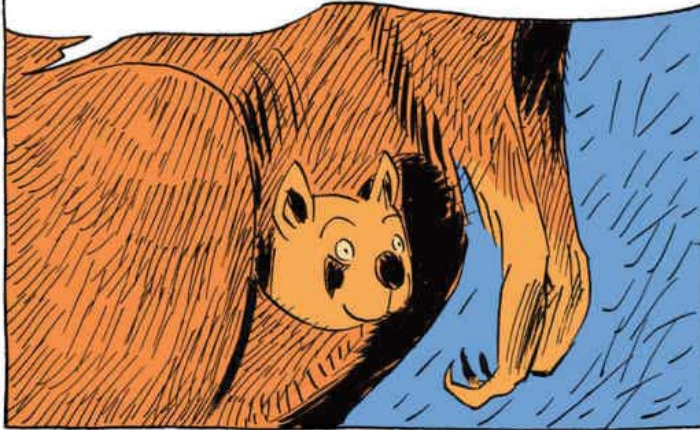
THE GIANT DIPROTODON, A TWO-AND-A-HALF-TON WOMBAT, CRUISED AROUND IN THE FOREST.



THESE BEAUTIFUL GIANTS WERE BASICALLY UNKNOWN IN AFRICA AND ASIA, BUT BOY, WERE THEY THE KINGS IN AUSTRALIA!



APART FROM THE BIRDS AND REPTILES, ALL THESE CRITTERS WERE MARSUPIALS: LIKE KANGAROOS, THEY GAVE BIRTH TO HELPLESS, ITTY-BITTY BABIES, AND THEN RAISED THEM ON MILK IN A POUCH.



WHAT HAPPENED TO THEM, HUH, HUH?!?



ALMOST ALL THESE GIANTS VANISHED IN A FEW THOUSAND YEARS! TWENTY-THREE OF THE TWENTY-FOUR AUSTRALIAN ANIMALS WEIGHING MORE THAN 100 POUNDS... BOOM! GOODBYE FOREVER!



AND A LOT OF SMALLER SPECIES BOUGHT IT TOO! IT WAS CARNAGE, MESSING WITH THE WHOLE AUSSIE ECOSYSTEM! ALL THE FOOD CHAINS WERE BROKEN AND REARRANGED! THE ECOSYSTEM HADN'T SEEN ANYTHING LIKE IT FOR MILLIONS OF YEARS.



WHO'S TO BLAME IF NOT YOU TWO? COME ON, 'FESS UP!



WHAT THE HELL IS GOING ON!!!

SO NOW YOU'RE INTERROGATING MY CLIENTS WITHOUT ME!

OH GREAT!... NOT ADAMSKI...





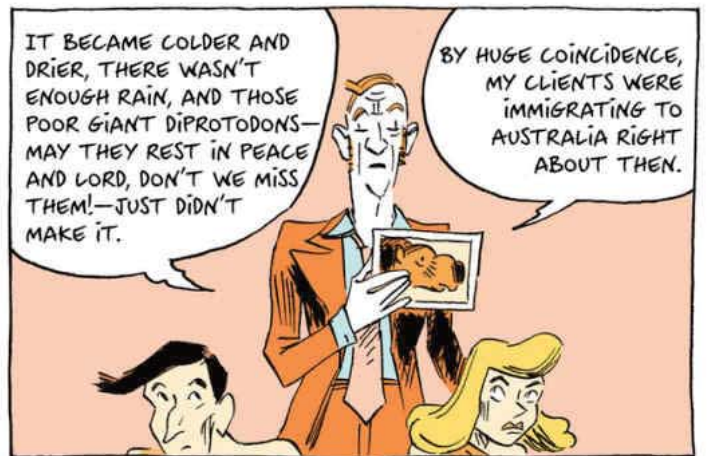
JUST DON'T ANSWER ANYTHING, THIS IS INTIMIDATION!



MY CLIENTS ARE INNOCENT, DETECTIVE LOPEZ! THIS CRIME, THIS EXTINCTION OF AUSTRALIAN MEGAFUNA, HAS NOTHING TO DO WITH THEM!
SO WHO, ALREADY?!



THE CLIMATE!
THE SUN, THE CLOUDS... MEAN ANYTHING TO YOU?! YOU SEE, THE CLIMATE CHANGED 50,000 YEARS AGO!



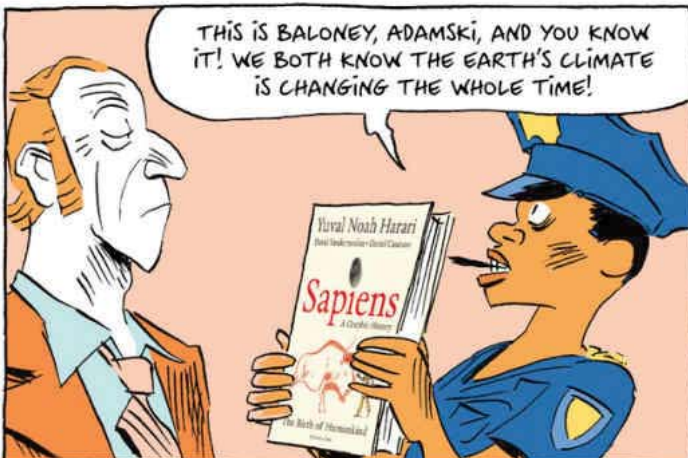
IT BECAME COLDER AND DRIER, THERE WASN'T ENOUGH RAIN, AND THOSE POOR GIANT DIPROTODONS—MAY THEY REST IN PEACE AND LORD, DON'T WE MISS THEM!—JUST DIDN'T MAKE IT.
BY HUGE COINCIDENCE, MY CLIENTS WERE IMMIGRATING TO AUSTRALIA RIGHT ABOUT THEN.



BUT BELIEVE ME, THIS HAS NOTHING TO DO WITH THEM! THEY SUFFERED BECAUSE OF THE CLIMATE TOO, YOU KNOW.
YOU ARE BLAMING INNOCENT PEOPLE!



SO YOU THINK THE CLIMATE DID IT?! REALLY?! THAT'S YOUR SCAPEGOAT, ADAMSKI?
IT'S A WALK IN THE PARK BLAMING EVERYTHING AND ANYTHING ON GOOD OLD MISTER CLIMATE!



THIS IS BALONEY, ADAMSKI, AND YOU KNOW IT! WE BOTH KNOW THE EARTH'S CLIMATE IS CHANGING THE WHOLE TIME!



SO WHAT?!
SOOOOO... NO MATTER WHAT HAPPENS, THERE IS PROBABLY CLIMATE CHANGE IN THE BACKGROUND. IT DOESN'T MEAN YOU CAN BLAME THE CLIMATE FOR EVERYTHING.



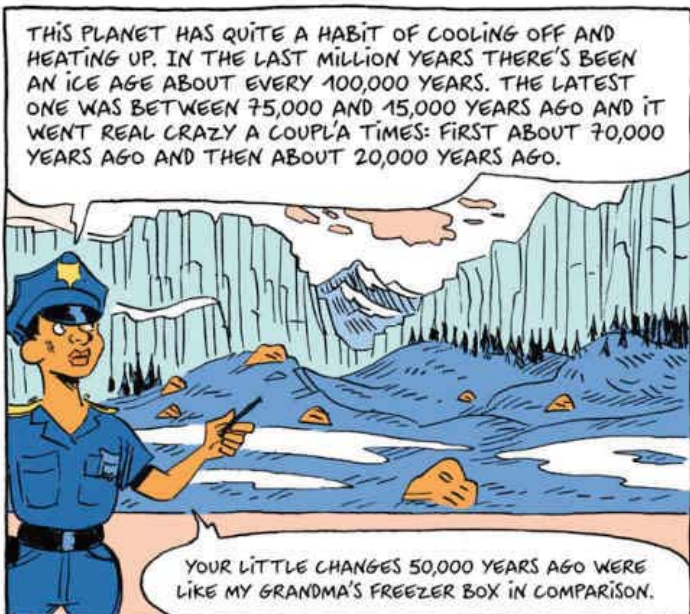
FIRST OFF, EVEN IF YOU'RE RIGHT ABOUT AUSTRALIA'S CLIMATE CHANGING 50,000 YEARS AGO, IT WASN'T EXACTLY ARMAGEDDON! I CAN'T SEE HOW A LITTLE CHANGE IN THE WEATHER COULD HAVE CAUSED THIS MOTHER OF AN EXTINCTION!

IF YOU SAY SO! WERE YOU THERE?



I KNOW A WHOLE LOT MORE ABOUT THIS THAN YOU DO, ADAMSKI!

CLICK!



THIS PLANET HAS QUITE A HABIT OF COOLING OFF AND HEATING UP. IN THE LAST MILLION YEARS THERE'S BEEN AN ICE AGE ABOUT EVERY 100,000 YEARS. THE LATEST ONE WAS BETWEEN 75,000 AND 15,000 YEARS AGO AND IT WENT REAL CRAZY A COUPLA TIMES: FIRST ABOUT 70,000 YEARS AGO AND THEN ABOUT 20,000 YEARS AGO.

YOUR LITTLE CHANGES 50,000 YEARS AGO WERE LIKE MY GRANDMA'S FREEZER BOX IN COMPARISON.



BUT LET'S GET BACK TO THE GIANT DIPROTODONS. THESE GUYS WERE TOUGH COOKIES. THEY'D BEEN AROUND IN AUSTRALIA FOR 1.5 MILLION YEARS. THEY MADE IT THROUGH AT LEAST TEN ICE AGES! AND THEY ALSO MADE IT THROUGH THE FIRST NUTSO PHASE OF THE LAST ICE AGE AROUND 70,000 YEARS AGO!



SO WHY WOULD THEY SUDDENLY CALL IT A DAY 50,000 YEARS AGO, HUH? EXACTLY WHEN YOUR CLIENTS MADE THEIR ENTRANCE?

PAH! THAT'S CIRCUMSTANTIAL AND JUST A COINCIDENCE...



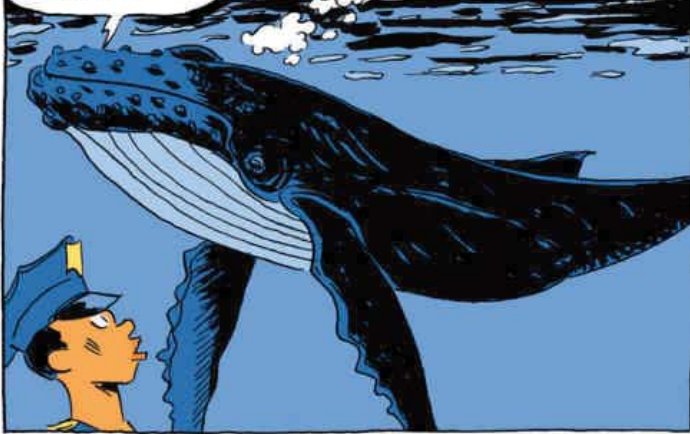
NO, IT ISN'T, ADAMSKI.

IF THE DIPROTODONS WERE THE ONLY BIG GUYS TO DIE OUT THEN, SURE, YOU COULD SAY IT WAS A COINCIDENCE. BUT MORE THAN 90% OF AUSTRALIA'S MEGAFAUNA BOUGHT IT AT THE SAME TIME!

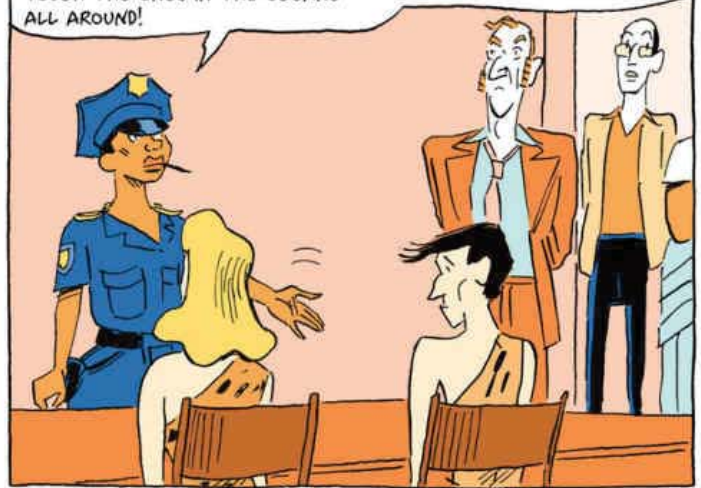
OK, SO IT'S CIRCUMSTANTIAL EVIDENCE... BUT GIVE ME A BREAK, DO YOU REALLY THINK IT'S A COINCIDENCE THAT YOUR CLIENTS ARRIVED IN AUSTRALIA AT THE EXACT SAME TIME THAT ALL THESE CRITTERS WERE DYING OF COLD?!

WELL, WHY NOT? COINCIDENCES DO HAPPEN. IS THAT ALL YOU GOT? YOU KNOW AS WELL AS I DO THAT THE COURT WILL FIND IN OUR FAVOR!

YOU'D HAVE THOUGHT, RIGHT? BUT I HAVE MORE EVIDENCE! WHEN CLIMATE CHANGE CAUSES MASS EXTINCTION, SEA CREATURES USUALLY TAKE JUST AS BIG A HIT AS THEIR COUSINS ON LAND, OK? WELL, THERE'S NO SIGN THAT ANY OCEAN ANIMALS AROUND AUSTRALIA VANISHED 50,000 YEARS AGO!



EVEN THOUGH THEIR LITTLE OCEAN-GOING HOBBY WAS HAVING A BOOM, YOUR CLIENTS WERE REALLY ONLY A THREAT ON LAND. THE STUFF THEY DID TOTALLY EXPLAINS WHY THIS WAVE OF EXTINCTION WIPED OUT AUSTRALIA'S LAND ANIMALS BUT DIDN'T TOUCH THE ONES IN THE OCEANS ALL AROUND!



IF I MAY, I'D LIKE TO ADD A THIRD ARGUMENT. THE ENSUING MILLENNIA SAW MASS EXTINCTIONS SIMILAR TO THIS ARCHETYPAL AUSTRALIAN DECIMATION WHENEVER HUMANS SETTLED ANOTHER PART OF THE OUTER WORLD.



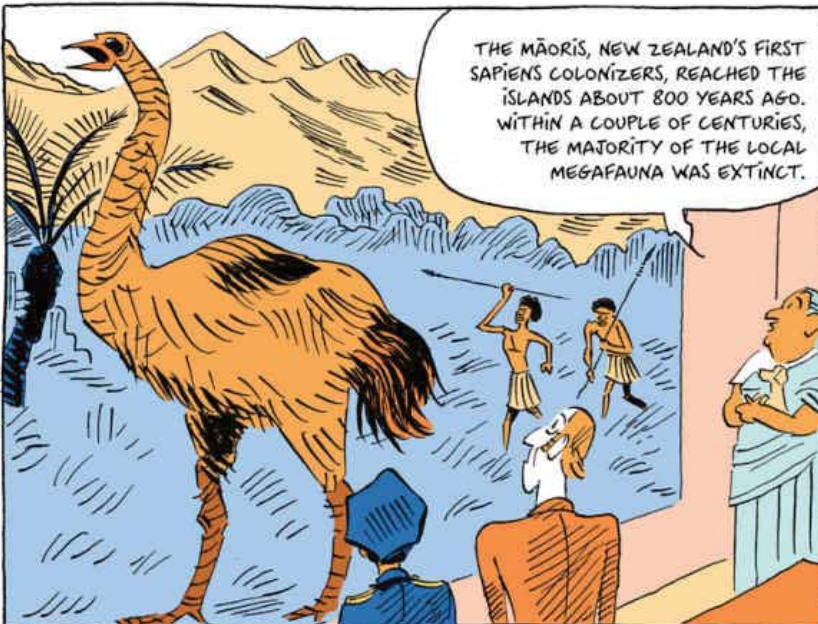
YOU SEE, ADAMSKI, WHICHEVER WAY YOU LOOK AT IT, SAPIENS ARE GUILTY—IRREFUTABLY!



TAKE NEW ZEALAND FOR EXAMPLE. THE MEGAFUNA THERE HAD WEATHERED THE SO-CALLED "CATASTROPHIC CLIMATE CHANGE" OF 50,000 YEARS AGO WITHOUT A SCRATCH, BUT THEN SUFFERED DEVASTATING BLOWS IMMEDIATELY AFTER THE FIRST HUMANS SET FOOT ON THE ISLANDS.



THE MĀORIS, NEW ZEALAND'S FIRST SAPIENS COLONIZERS, REACHED THE ISLANDS ABOUT 800 YEARS AGO. WITHIN A COUPLE OF CENTURIES, THE MAJORITY OF THE LOCAL MEGAFUNA WAS EXTINCT.



...ALONG WITH 60% OF THE ISLANDS' BIRD SPECIES.





SOMETHING SIMILAR HAPPENED TO THE MAMMOTHS OF WRANGEL: AN ISLAND IN THE ARCTIC OCEAN, 125 MILES NORTH OF THE SIBERIAN COAST.



MAMMOTHS HAD FLOURISHED FOR MILLIONS OF YEARS OVER MOST OF THE NORTHERN HEMISPHERE BUT AS HOMO SAPIENS SPREAD ACROSS EURASIA AND THEN NORTH AMERICA, THE MAMMOTHS RETREATED.



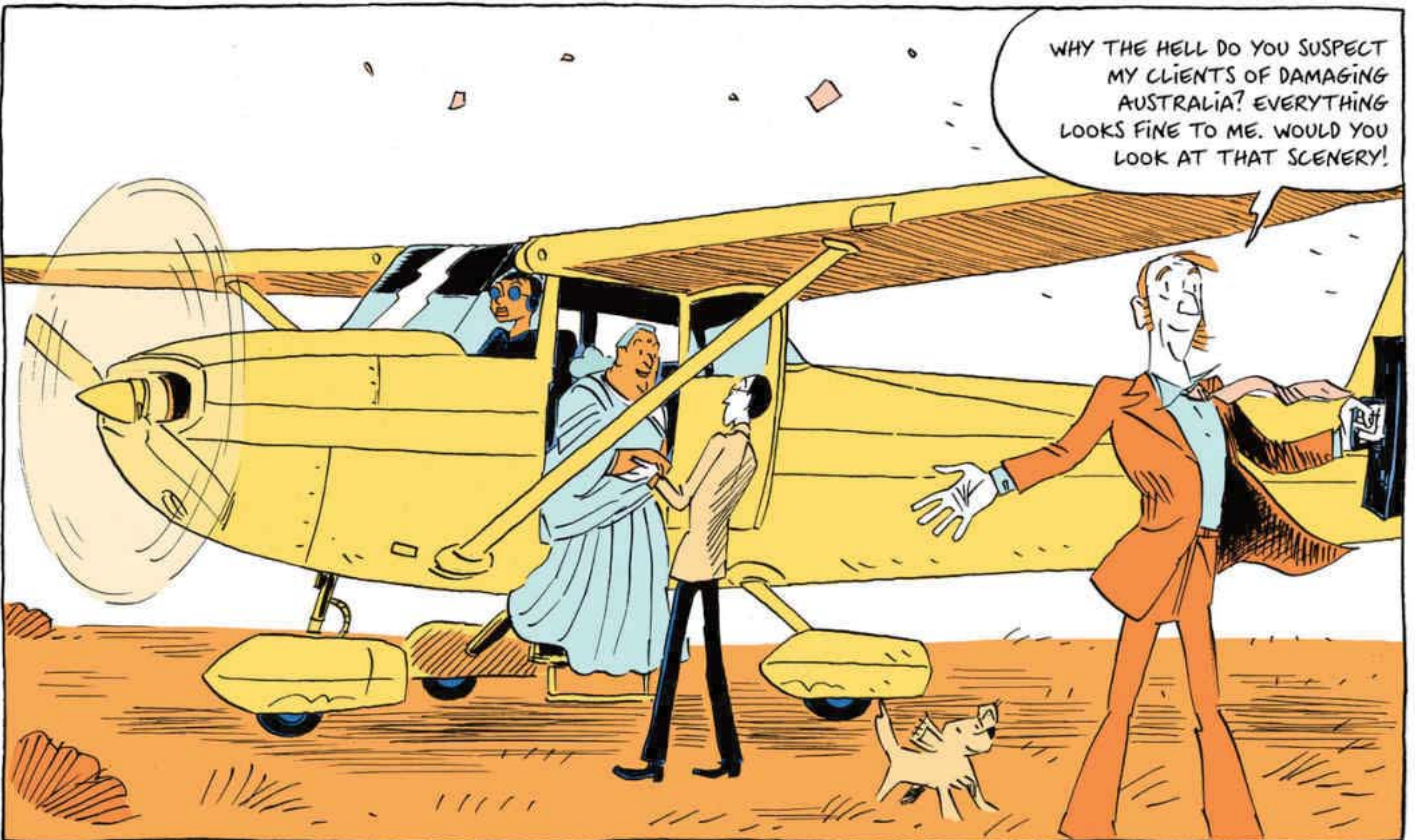
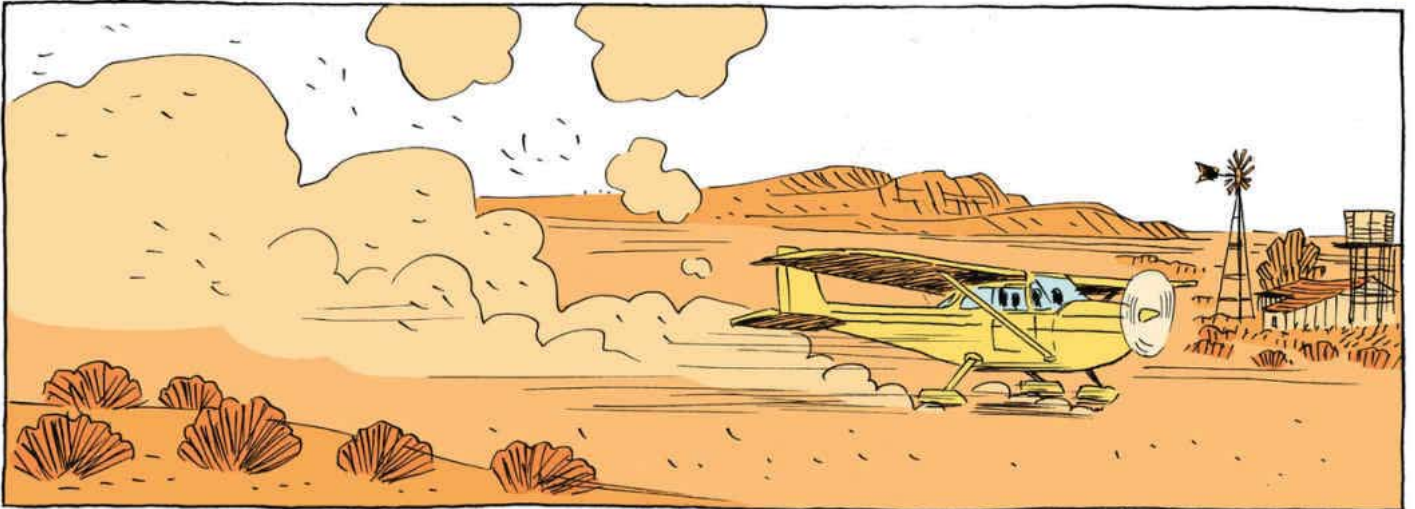
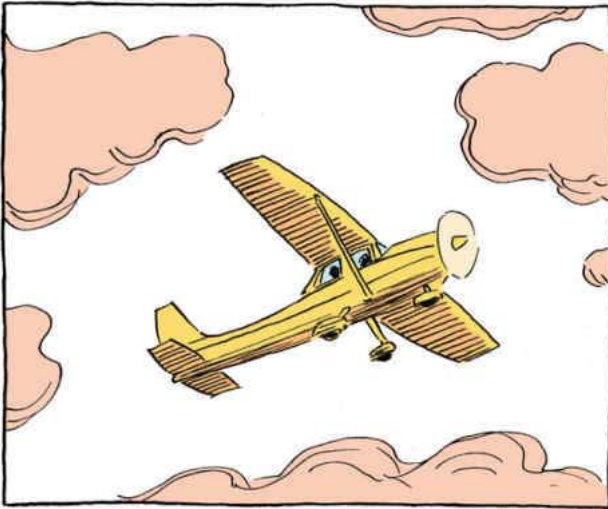
BY ABOUT 10,000 YEARS AGO THERE WERE NO MAMMOTHS TO BE FOUND ANYWHERE, EXCEPT ON A FEW REMOTE ARCTIC ISLANDS, ESPECIALLY WRANGEL.



WRANGEL'S MAMMOTHS DID WELL FOR A FEW THOUSAND YEARS MORE, THEN SUDDENLY DISAPPEARED ABOUT 4,000 YEARS AGO, JUST WHEN THE FIRST HUMANS ARRIVED.

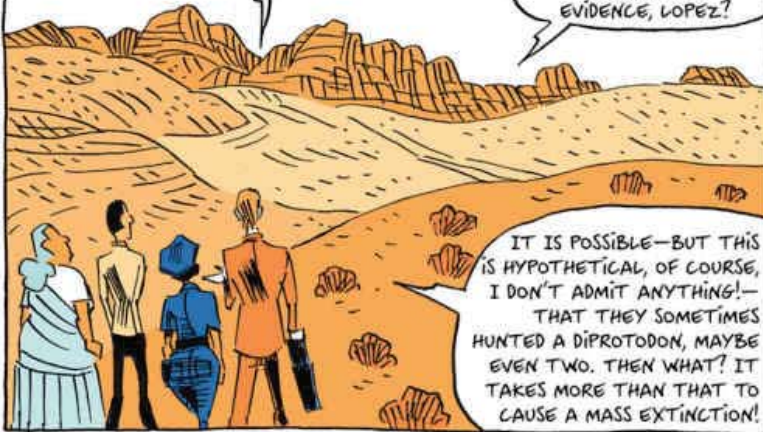






OK, LOPEZ, LET'S ACCEPT THAT MY CLIENTS AND THEIR FRIENDS PASSED THROUGH HERE AT SOME POINT. BUT HOW CAN YOU BELIEVE THEY CAUSED AN ECOLOGICAL CATASTROPHE ALL ON THEIR OWN? THEY DIDN'T HAVE ATOM BOMBS, YOU KNOW! ALL THEY HAD WAS STONE-AGE TECHNOLOGY, FOR PETE'S SAKE!

WHERE'S YOUR IRREFUTABLE EVIDENCE, LOPEZ?



IT IS POSSIBLE—BUT THIS IS HYPOTHETICAL, OF COURSE, I DON'T ADMIT ANYTHING!— THAT THEY SOMETIMES HUNTED A DIPROTODON, MAYBE EVEN TWO. THEN WHAT? IT TAKES MORE THAN THAT TO CAUSE A MASS EXTINCTION!

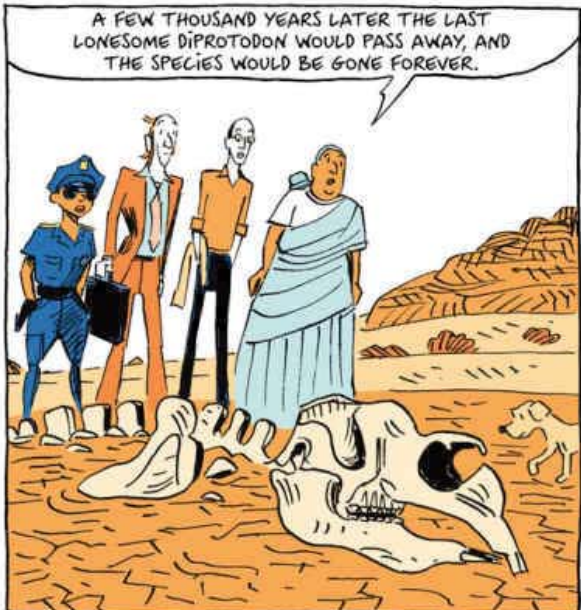
I COULD ANSWER THAT, MR. ADAMSKI. THE LARGE ANIMALS THAT WERE THE PRIMARY VICTIMS OF THE AUSTRALIAN EXTINCTION BRED SLOWLY. THEY HAD LONG PREGNANCIES, FEW YOUNG PER PREGNANCY, AND LONG BREAKS IN BETWEEN.



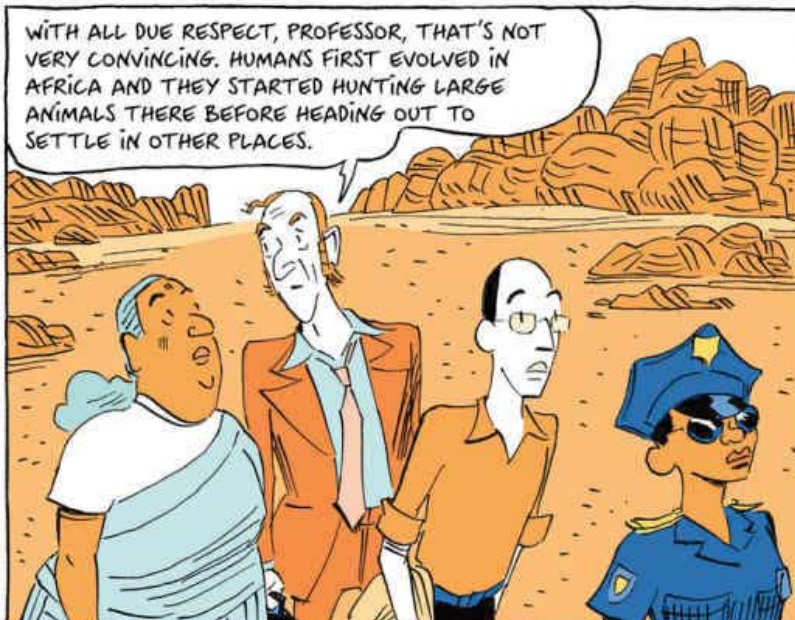
SO, EVEN IF HUMANS KILLED ONLY ONE DIPROTODON EVERY TWO OR THREE MONTHS, THAT WOULD BE ENOUGH FOR DEATHS TO OUTNUMBER BIRTHS.



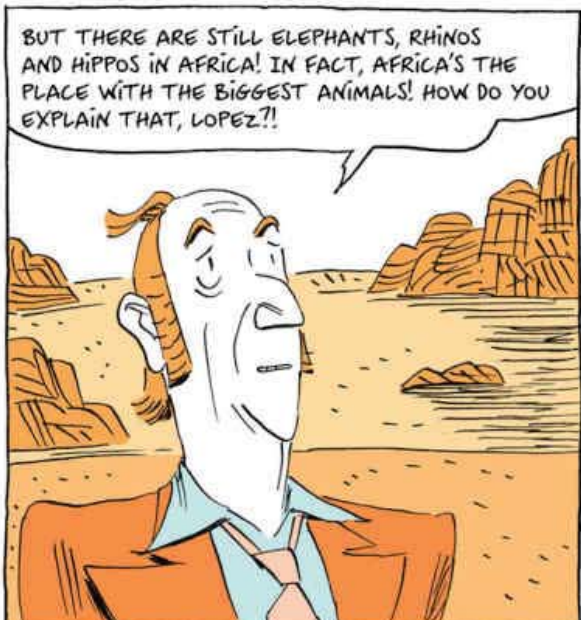
A FEW THOUSAND YEARS LATER THE LAST LONESOME DIPROTODON WOULD PASS AWAY, AND THE SPECIES WOULD BE GONE FOREVER.



WITH ALL DUE RESPECT, PROFESSOR, THAT'S NOT VERY CONVINCING. HUMANS FIRST EVOLVED IN AFRICA AND THEY STARTED HUNTING LARGE ANIMALS THERE BEFORE HEADING OUT TO SETTLE IN OTHER PLACES.



BUT THERE ARE STILL ELEPHANTS, RHINOS AND HIPPOS IN AFRICA! IN FACT, AFRICA'S THE PLACE WITH THE BIGGEST ANIMALS! HOW DO YOU EXPLAIN THAT, LOPEZ?!





NOT SO FAST, ADAMSKI. YOU'RE FORGETTING EVOLUTION.

THAT'S RIGHT! WHEN HUMANS STARTED HUNTING IN AFRICA, THEY WERE STILL TOTAL ROOKIES. WHILE THEY SLOWLY GOT THEIR ACT TOGETHER, THE BIG ANIMALS HAD TIME TO LEARN TO BE SCARED OF 'EM. BY THE TIME SAPIENS WAS THE DEADLIEST SPECIES ON EARTH, AFRICA'S BIG ANIMALS ALREADY KNEW THEY DID NOT WANT TO HANG OUT WITH THESE TWO-LEGGED APES.



SO, BASICALLY YOU'RE SAYING AFRICAN ANIMALS WERE SMART AND RAN AWAY BUT AUSTRALIAN ANIMALS WERE SO DUMB THEY JUST LET THEMSELVES BE SLAUGHTERED?

IT'S NOT ABOUT INTELLIGENCE, IT'S ABOUT EXPERIENCE! IT WAS WAY EASIER TO HUNT THE BIG GUYS IN AUSTRALIA THAN IN AFRICA, BECAUSE THE AUSTRALIAN ANIMALS HADN'T LEARNED TO BE SCARED OF HUMANS!



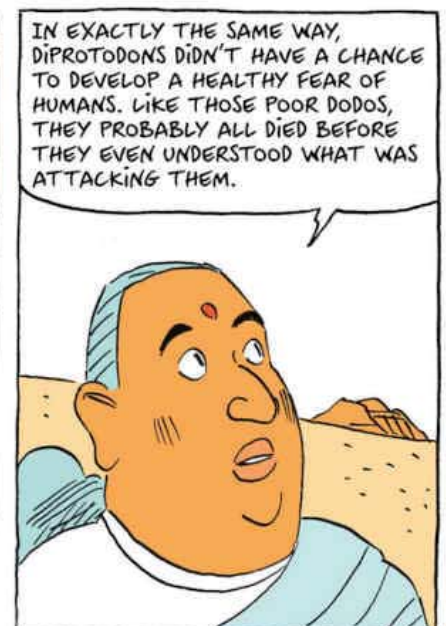
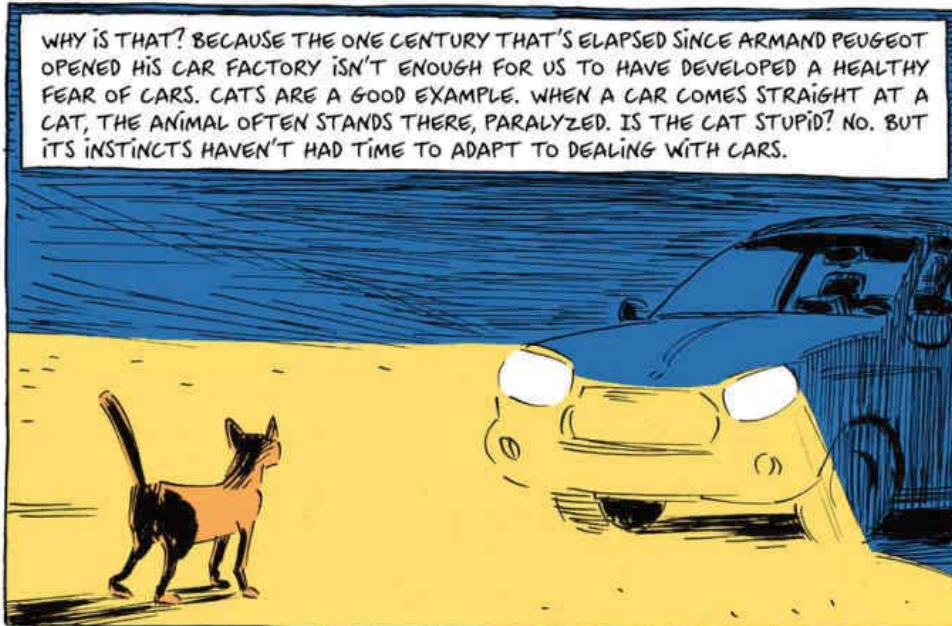
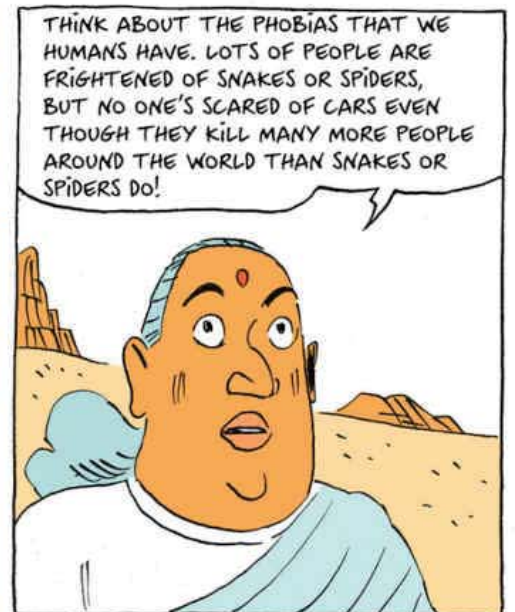
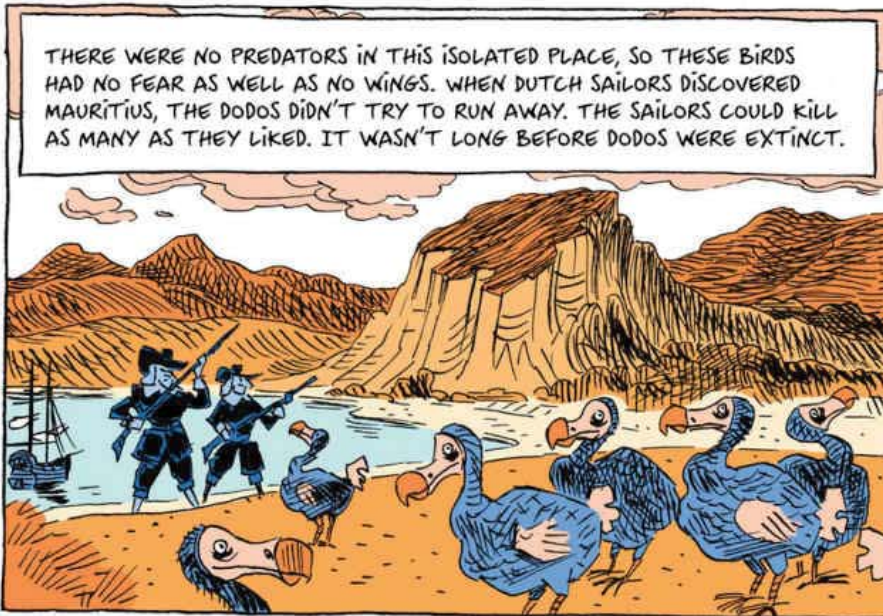
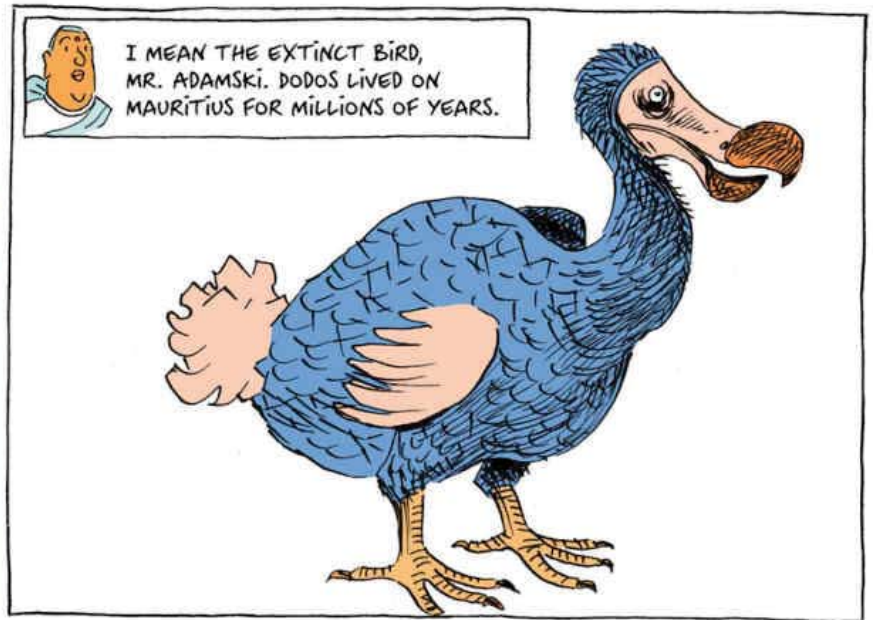
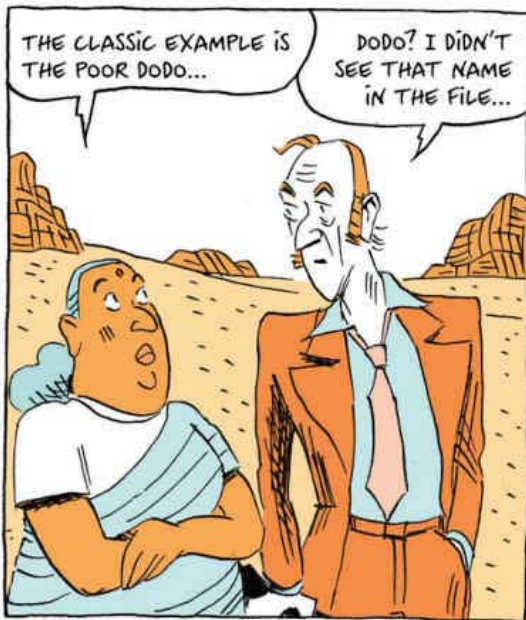
YOU WANNA KNOW SOMETHING, ADAMSKI? YOUR CLIENTS DON'T EXACTLY LOOK SUPER DANGEROUS. THEY DON'T HAVE LONG SHARP TEETH, THEY'RE NOT AGILE AND RIPPED...



DIPROTODONS WERE THE LARGEST MARSUPIALS EVER TO WALK THE EARTH, AND WHEN THEY FIRST SAW THESE FRAIL-LOOKING APES, THIS IS WHAT PROBABLY HAPPENED...



LEARNING TO BE AFRAID OF NEW DANGERS TAKES TIME.



AND BY THE TIME YOUR CLIENTS REACHED AUSTRALIA, THEY'D NOT ONLY MASTERED HUNTING BUT ALSO LEARNED TO USE FIRE. FACED WITH UNFAMILIAR AND THREATENING FORESTS THEY COULD DELIBERATELY BURN THEM DOWN. THIS CREATED OPEN GRASSLAND, WHICH ATTRACTED GAME THAT WAS EASIER TO HUNT.



WITH THESE TACTICS THEY COMPLETELY CHANGED THE ECOLOGY OF LARGE PARTS OF AUSTRALIA IN JUST A FEW SHORT MILLENNIA.



I'VE READ THE EVIDENCE CAREFULLY, PROFESSOR! GRANTED, A LOT OF TREES AND SCRUB DISAPPEARED AS A RESULT OF MY CLIENTS' FIRES...



BUT WHAT ABOUT EUCALYPTUS TREES? THEY WERE RARE IN AUSTRALIA 50,000 YEARS AGO AND THEY STARTED SPREADING VERY QUICKLY! THEY RECOVERED BETTER AFTER FIRES. SO MY CLIENTS' ARRIVAL USHERED IN A GOLDEN AGE FOR THE EUCALYPTUS! AND THERE'S SUPPORTING EVIDENCE! LOOK AT THESE PHOTOS OF FOSSILIZED PLANTS! EVERYTHING CORROBORATES IT!



AND THAT'S NOT ALL! THESE CHANGES IN VEGETATION INFLUENCED THE ANIMALS THAT ATE THE PLANTS AND THE CARNIVORES THAT ATE THOSE ANIMALS. TAKE KOALAS, FOR EXAMPLE. THEY EAT NOTHING BUT EUCALYPTUS LEAVES SO THEY HAPPILY MUNCHEDED THEIR WAY INTO NEW TERRITORIES!! AND ALL THANKS TO MY CLIENTS!



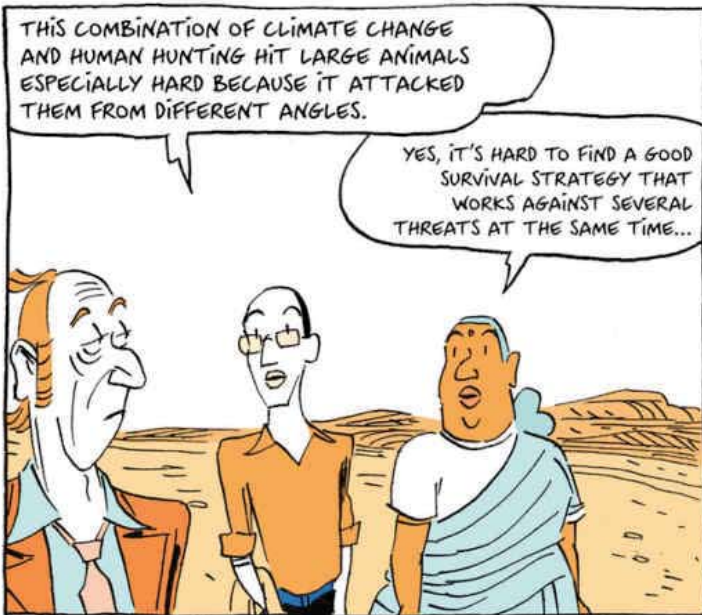
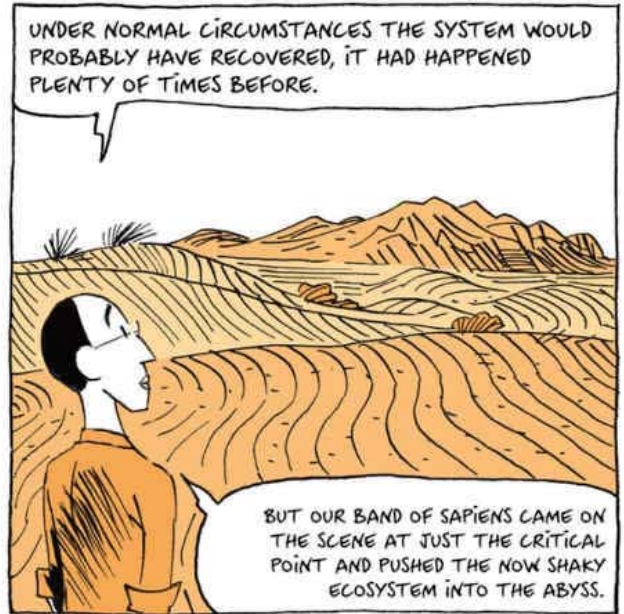
AND WHAT COULD BE CUTER THAN A PRETTY LITTLE KOALA, TELL ME THAT, HMM?

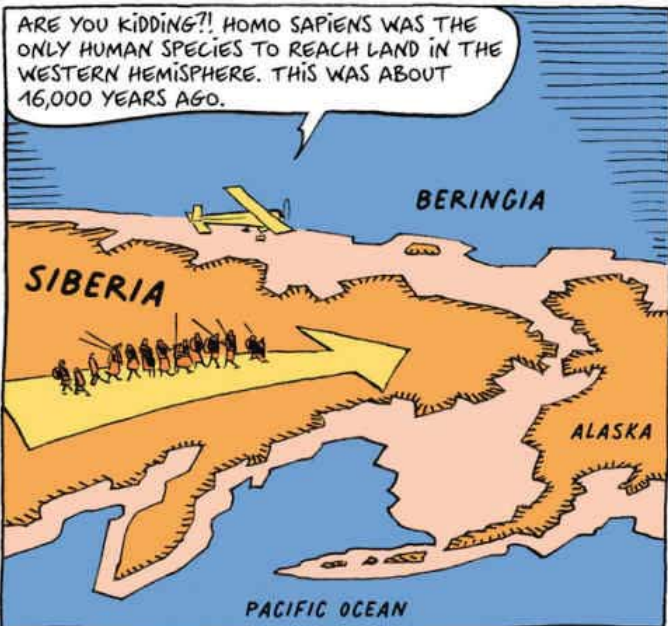
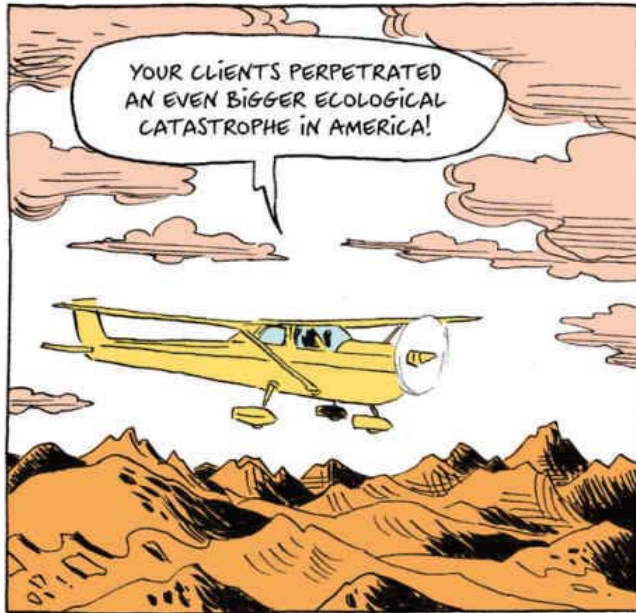
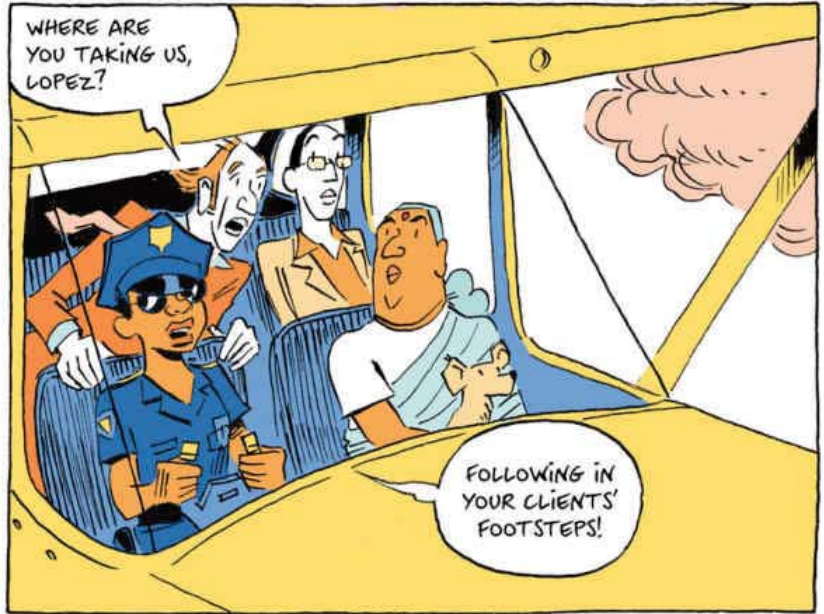
LOPEZ, YOU NEED TO THINK HOW THE JURY WILL REACT WHEN I CALL CUTE KOALAS AS WITNESSES.



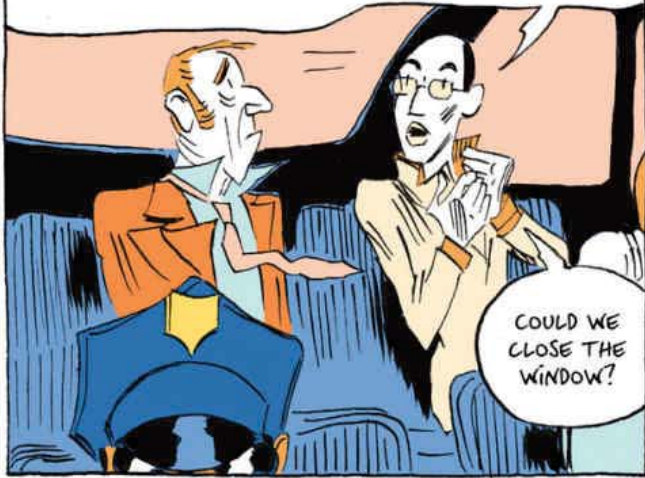
YES, BUT MOST OTHER ANIMALS SUFFERED TERRIBLY, MR. ADAMSKI. MANY AUSTRALIAN FOOD CHAINS COLLAPSED, DRIVING THE WEAKEST LINKS INTO EXTINCTION.







NOT THAT IT WAS EASY! THE JOURNEY WAS TOUGH, PERHAPS HARDER THAN THE SEA CROSSING TO AUSTRALIA. AND FIRST, SAPIENS HAD TO WITHSTAND NORTHERN SIBERIA'S EXTREME ARCTIC CONDITIONS. THE SUN DOESN'T COME UP AT ALL IN WINTER AND TEMPERATURES CAN DROP TO -60°F .



OH, COME ON! ARE YOU SURE IT WAS MY CLIENTS? DID YOU TAKE A GOOD LOOK AT THEM? SAPIENS WERE CUT OUT FOR LIFE ON THE HOT AFRICAN SAVANNA, NOT SIBERIA! EVEN THE NEANDERTHALS, WHO WERE ADAPTED TO COLD CLIMATES, NEVER SUCCEEDED IN COLONIZING NORTHERN SIBERIA.



YOU'RE RIGHT, YOUR CLIENTS' BODIES WERE ADAPTED TO LIFE ON THE AFRICAN SAVANNA, BUT THEIR MINDS FOUND INGENUOUS SOLUTIONS TO SURVIVE IN LANDS OF SNOW AND ICE!



WHEN BANDS OF FORAGERS MIGRATED INTO COLDER CLIMATES, THEY LEARNED TO MAKE SNOWSHOES AND THERMAL CLOTHING USING LAYERS OF FURS AND SKINS TIGHTLY SEWN TOGETHER WITH A NEEDLE.



THEY DEVELOPED NEW WEAPONS AND COOPERATIVE HUNTING TECHNIQUES SO THEY COULD TRACK AND KILL MAMMOTHS AND OTHER BIG GAME IN THE FAR NORTH.



AS THEIR THERMAL CLOTHING AND HUNTING TECHNIQUES IMPROVED, SAPIENS DARED TO VENTURE DEEPER INTO THESE FROZEN REGIONS. AND AS THEY MOVED NORTH, THEIR CLOTHES, HUNTING STRATEGIES AND OTHER SURVIVAL SKILLS KEPT ON GETTING BETTER.



BUT JUST LOOK AT THIS HOSTILE PLACE! IT DOESN'T MAKE ANY SENSE! WHY WOULD ANYONE CHOOSE TO BANISH THEMSELVES TO SIBERIA?



MAYBE THE SUCKERS WERE DRIVEN NORTH BY WAR, ADAMSKI!!!

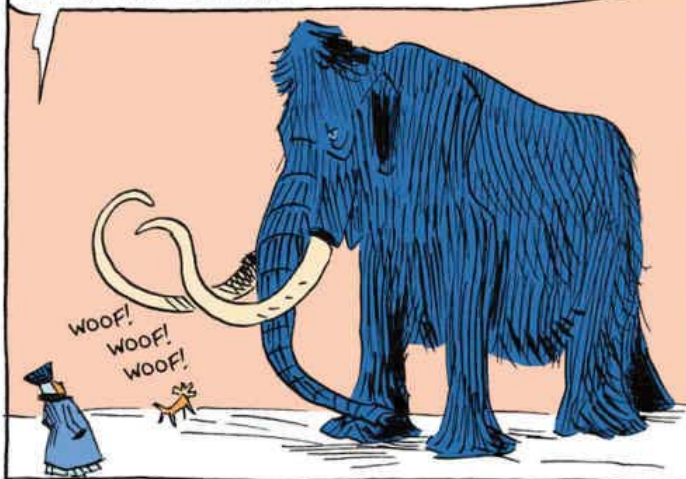


OR MAYBE THERE WERE DEMOGRAPHIC PRESSURES OR NATURAL CATASTROPHES....

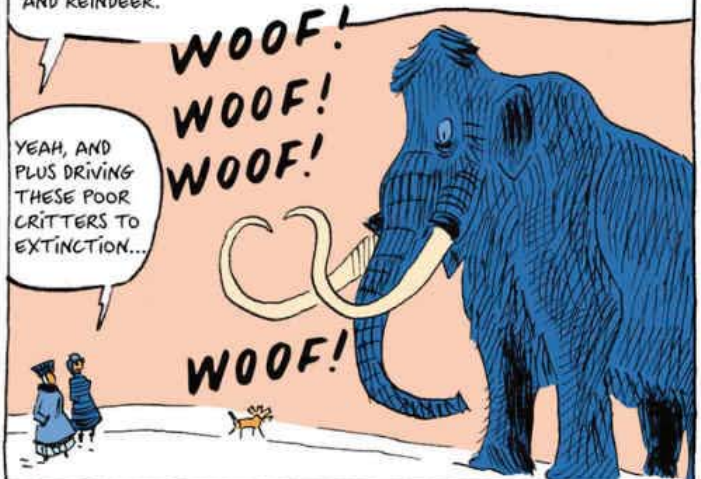
BUT SOME OF THEM MAY HAVE BEEN LURED BY MORE POSITIVE REASONS... I MEAN THESE FREEZING EXPANSSES WERE FULL OF BIG, JUICY ANIMALS LIKE REINDEER AND MAMMOTHS.



EVERY MAMMOTH WAS A HUGE SOURCE OF MEAT—AND IN THOSE TEMPERATURES, THEY COULD EVEN FREEZE IT FOR LATER! BUT IT WAS ALSO A SOURCE OF TASTY FAT, WARM FUR AND PRECIOUS IVORY.



REMEMBER SUNGIR? THE ARCHAEOLOGICAL EVIDENCE FROM THAT SITE PROVES THAT MAMMOTH-HUNTERS DIDN'T JUST SURVIVE IN THE FROZEN NORTH—THEY THRIVED. THEY GRADUALLY SPREAD FAR AND WIDE, FOLLOWING THE MAMMOTHS, MASTODONS, RHINOCEROSSES AND REINDEER.



ENOUGH, KIKI! SORRY ABOUT HER! WE SHOULD GET BACK TO THE PLANE.



AROUND 16,000 YEARS AGO, THEIR HUNTING TOOK SOME OF THEM FROM NORTHEASTERN SIBERIA INTO ALASKA.



OF COURSE, THEY DIDN'T REALIZE THEY WERE DISCOVERING A NEW WORLD! TO THEM—AND TO THE MAMMOTHS—ALASKA WAS JUST AN EXTENSION OF SIBERIA.

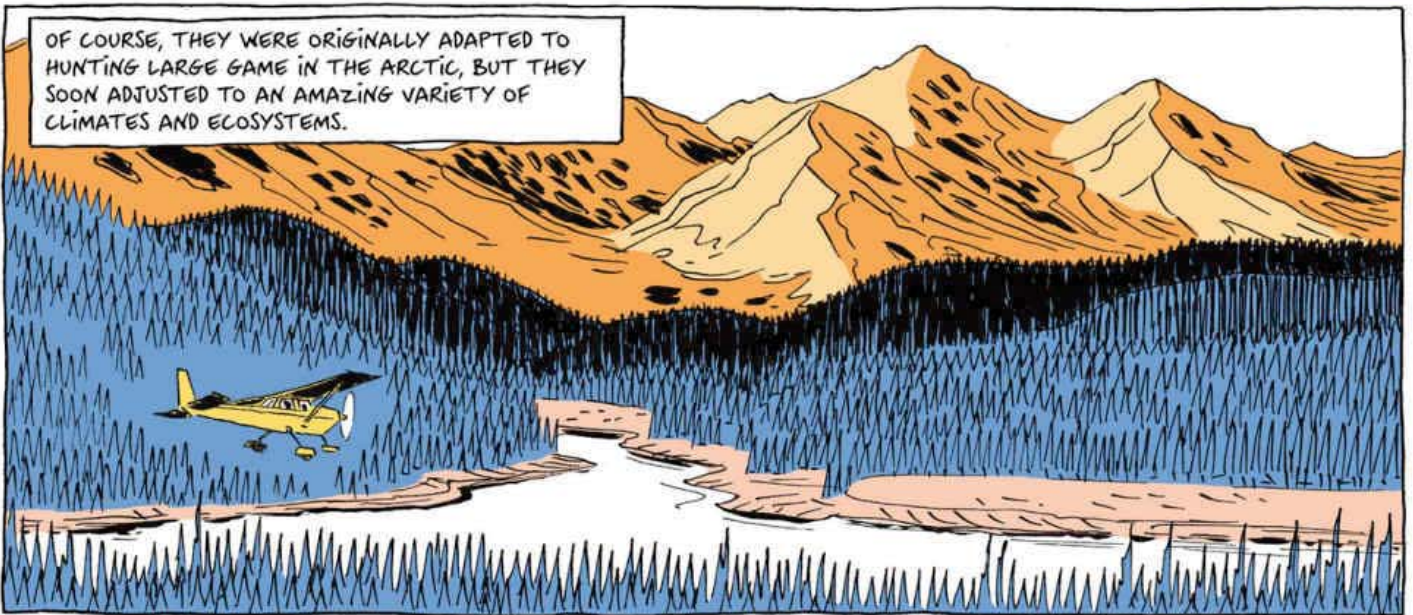
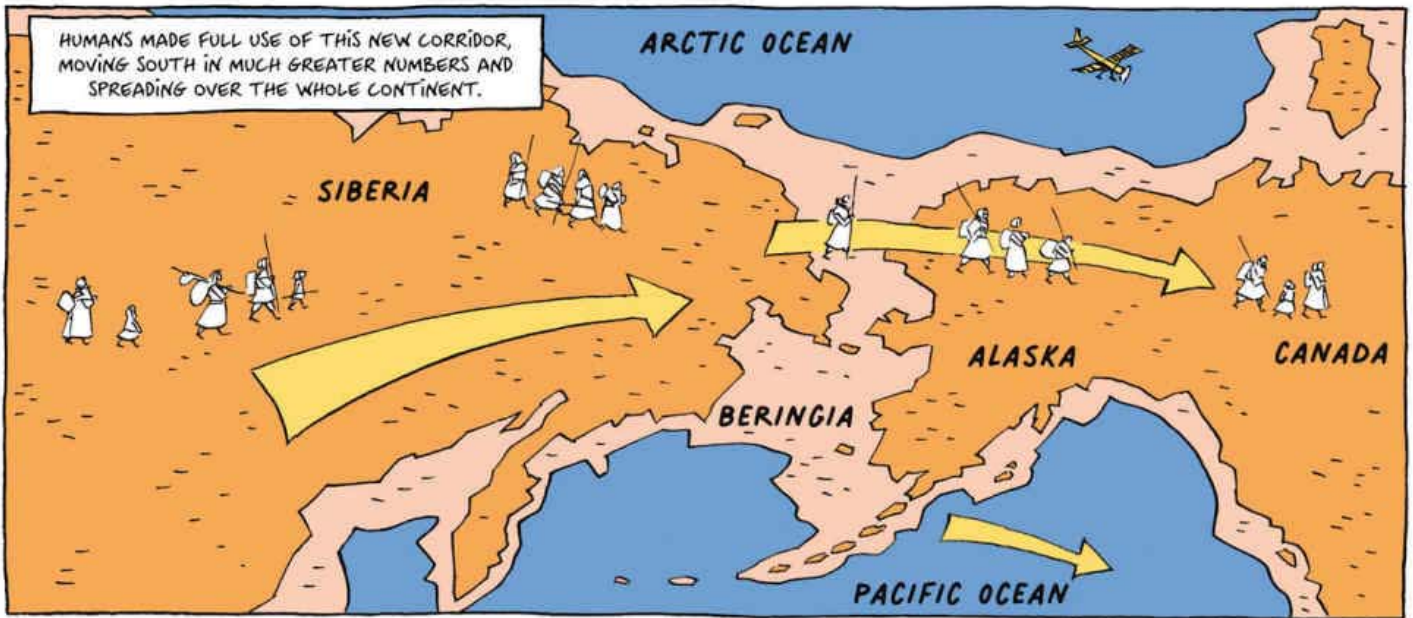


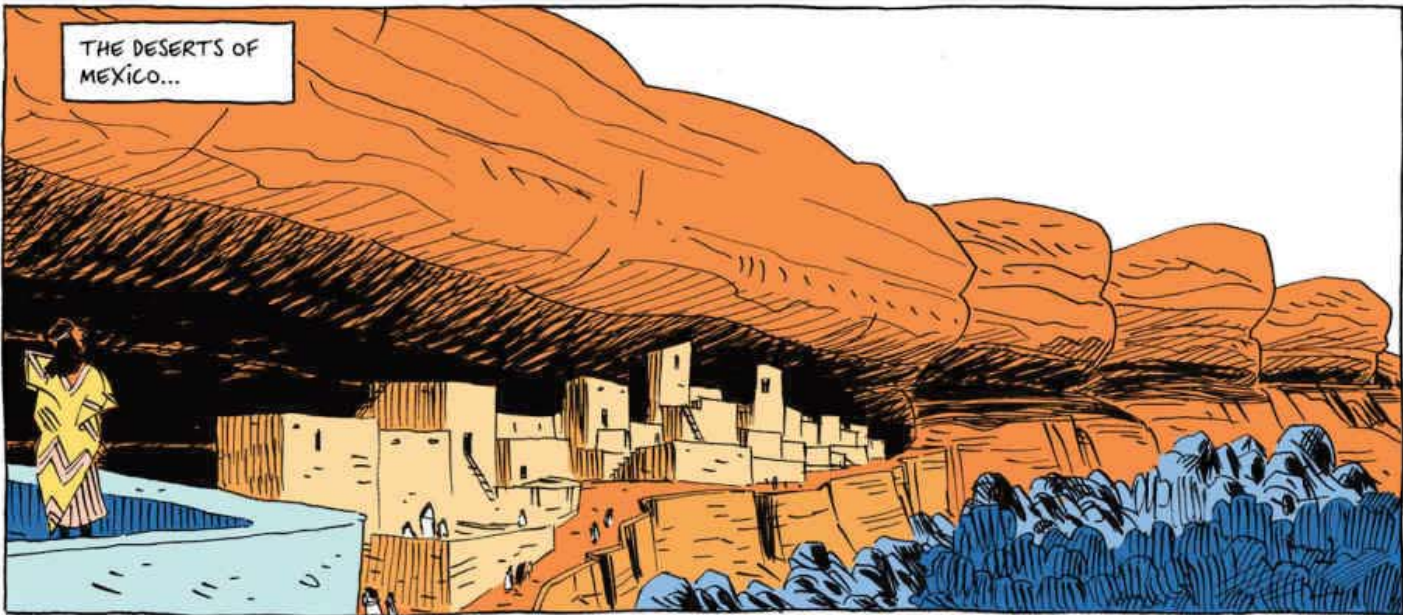
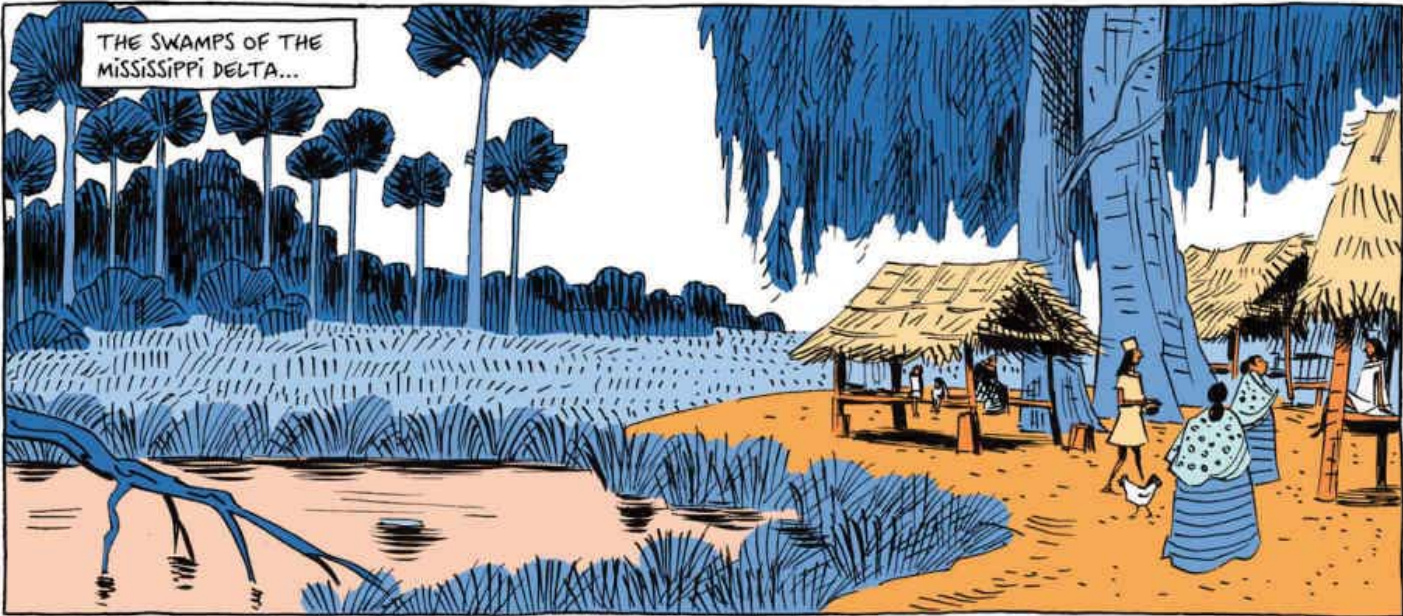
AT FIRST, THERE WERE GLACIERS BLOCKING OFF ALASKA FROM THE REST OF AMERICA SO ONLY A HANDFUL OF PIONEERS MADE IT THROUGH TO EXPLORE FURTHER SOUTH.

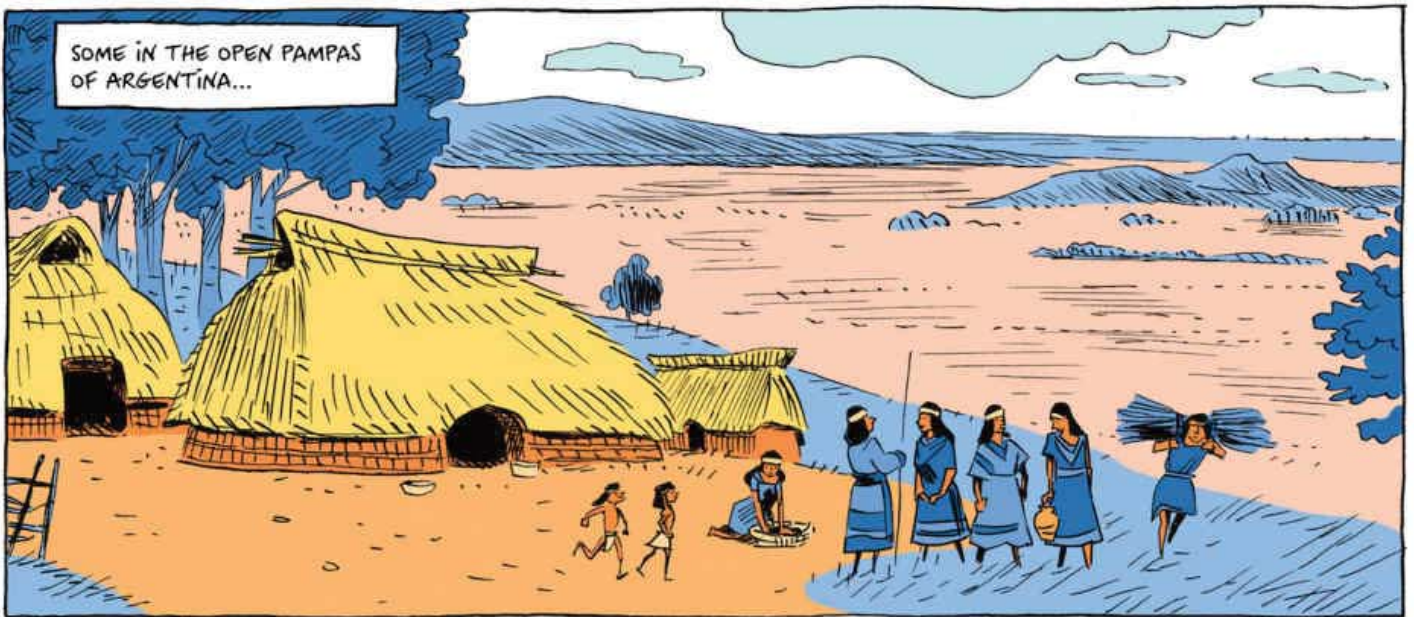


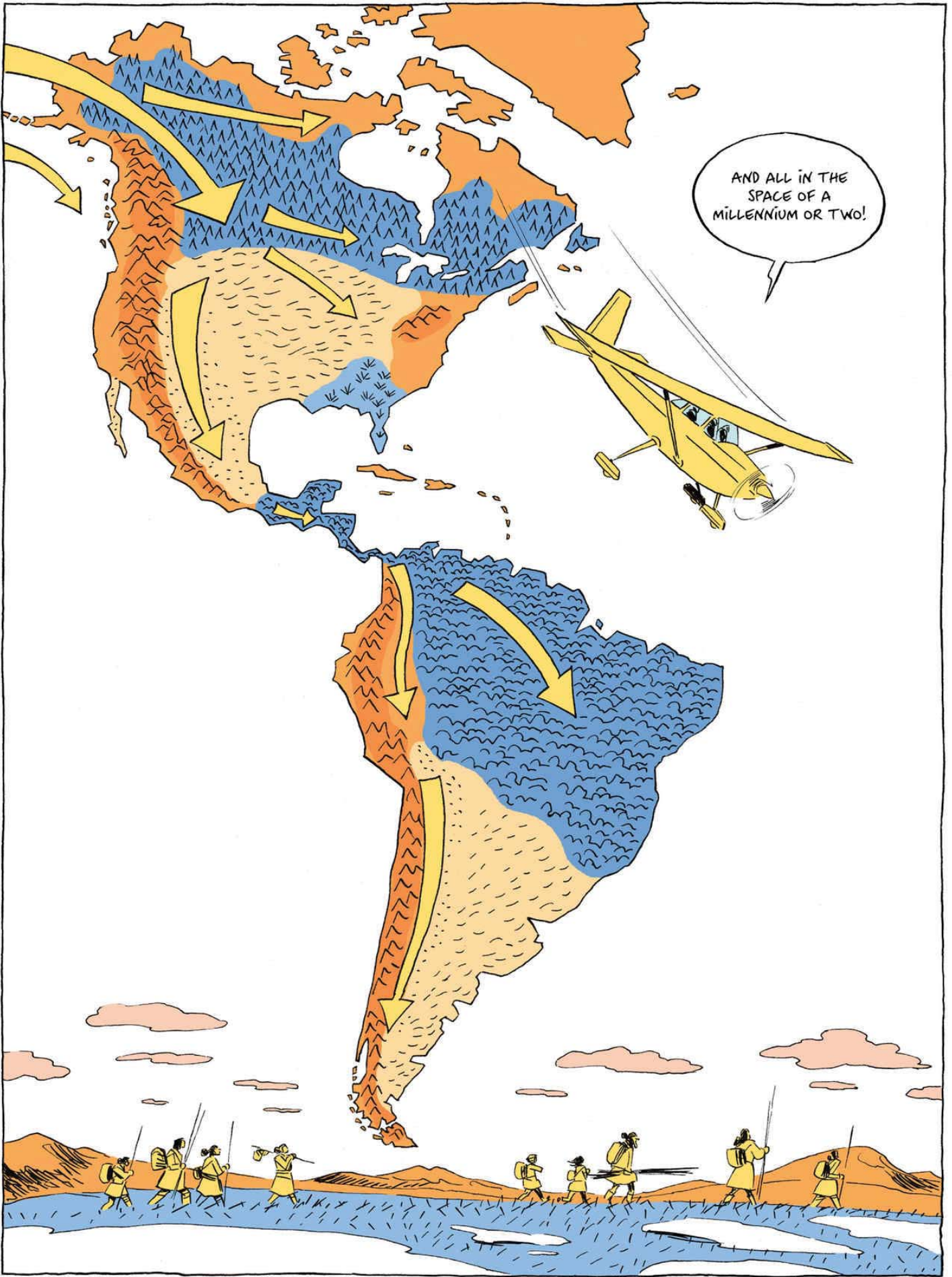
THEN ABOUT 14,000 YEARS AGO, GLOBAL WARMING MELTED THE ICE, MAKING THE JOURNEY MUCH EASIER.





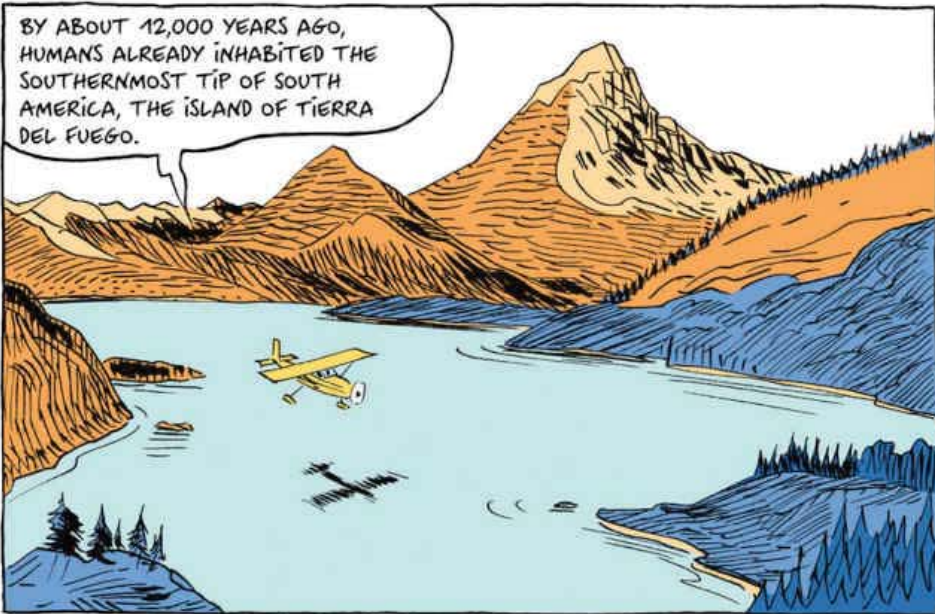






AND ALL IN THE
SPACE OF A
MILLENNIUM OR TWO!

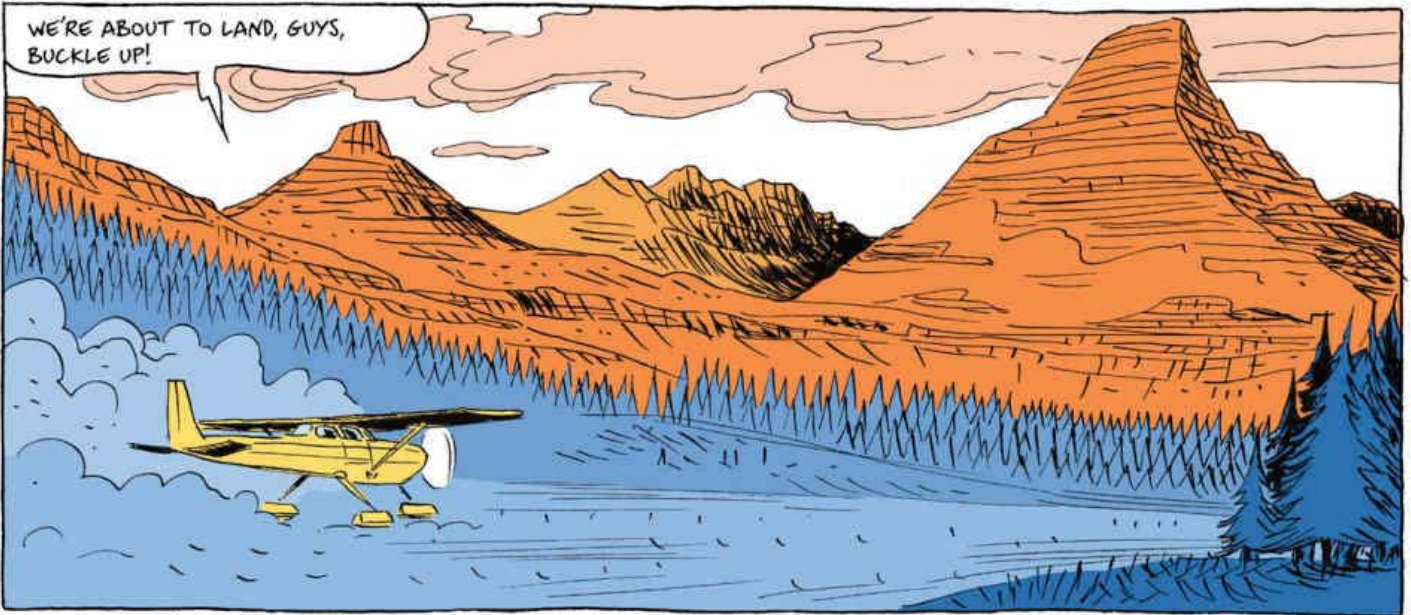
BY ABOUT 12,000 YEARS AGO, HUMANS ALREADY INHABITED THE SOUTHERNMOST TIP OF SOUTH AMERICA, THE ISLAND OF TIERRA DEL FUEGO.



YEAH, AND YOU KNOW WHAT THIS STORMING OF THE AMERICAN CONTINENT SHOWS? IT SHOWS JUST HOW INGENUOUS AND ADAPTABLE YOUR CLIENTS ARE!

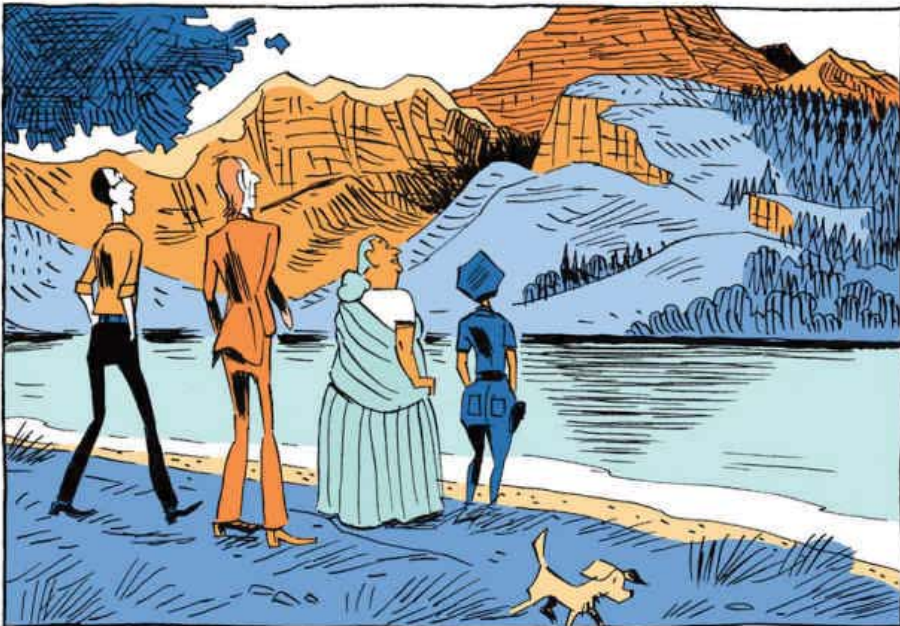


WE'RE ABOUT TO LAND, GUYS, BUCKLE UP!



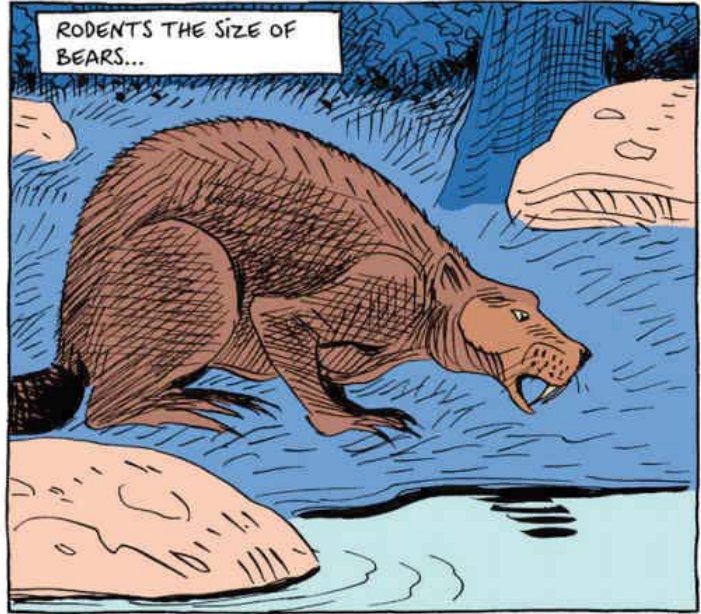
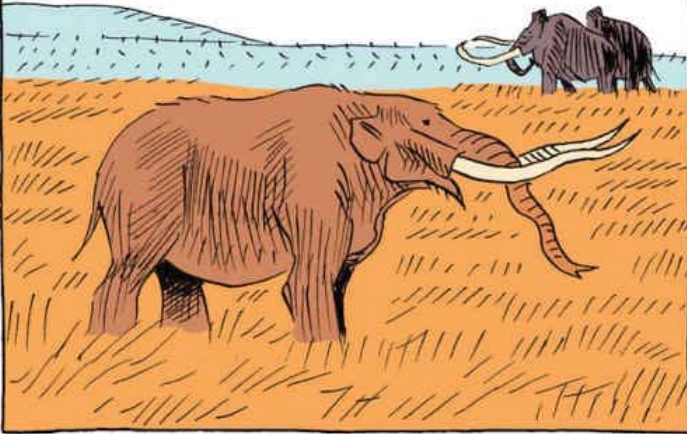
NO OTHER ANIMAL HAD EVER SPREAD SO QUICKLY INTO SUCH A VARIETY OF RADICALLY DIFFERENT HABITATS—AND THEY MANAGED IT WITH VIRTUALLY THE SAME GENES THROUGHOUT.

HMM, AND LEAVING A LONG TRAIL OF VICTIMS BEHIND 'EM...

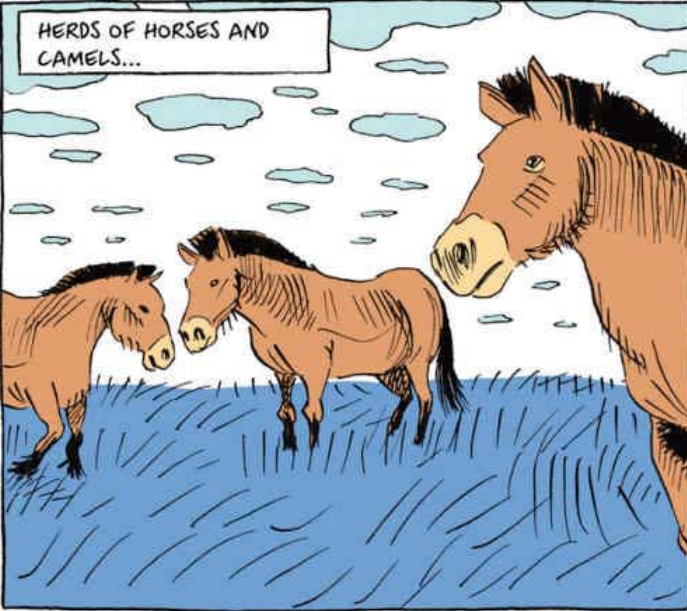




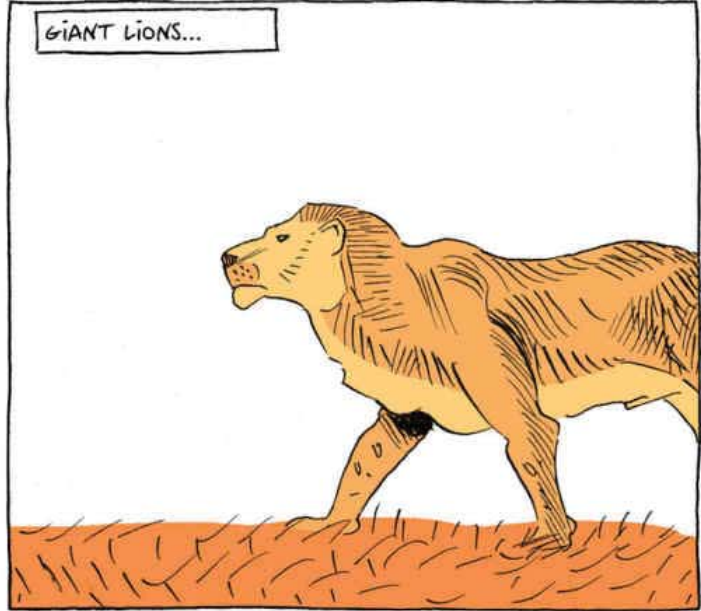
AMERICAN FAUNA WAS FAR RICHER 14,000 YEARS AGO THAN IT IS TODAY. WHEN THE FIRST AMERICANS HEADED SOUTH FROM ALASKA INTO THE PLAINS OF CANADA AND THE WESTERN UNITED STATES, THEY FOUND MAMMOTHS AND MASTODONS...



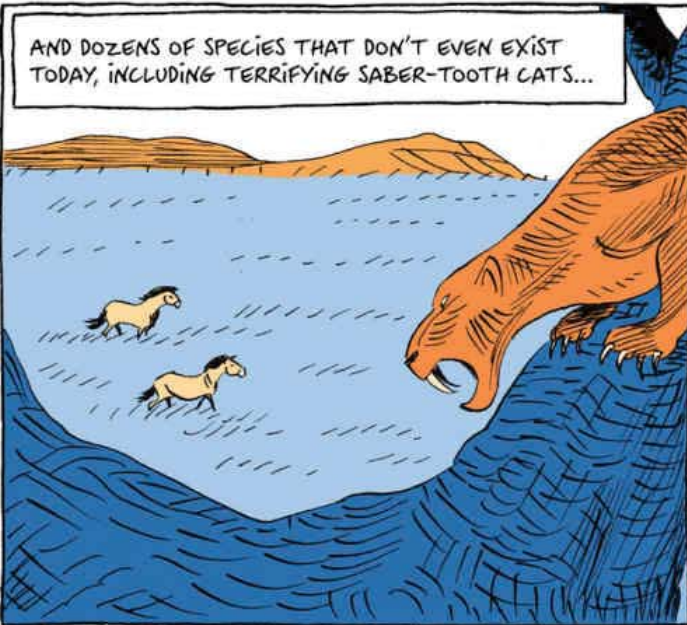
RODENTS THE SIZE OF BEARS...



HERDS OF HORSES AND CAMELS...



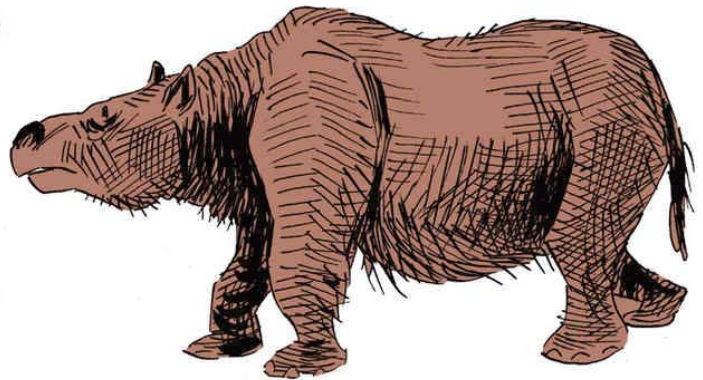
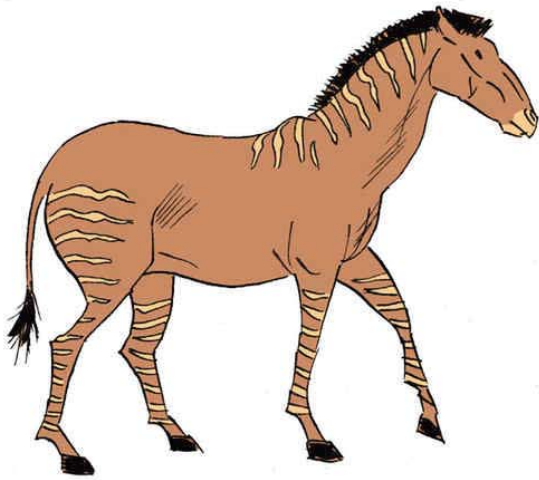
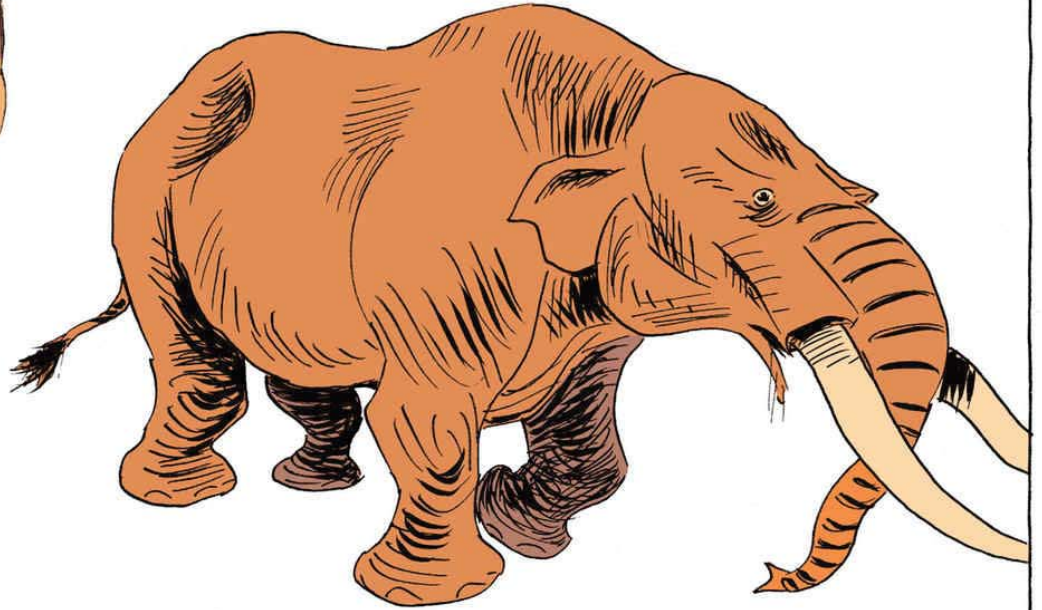
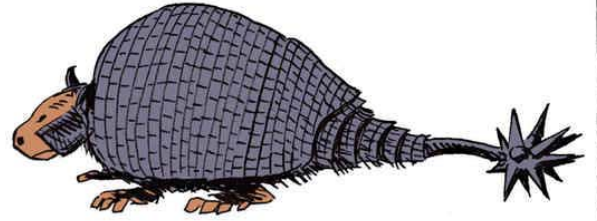
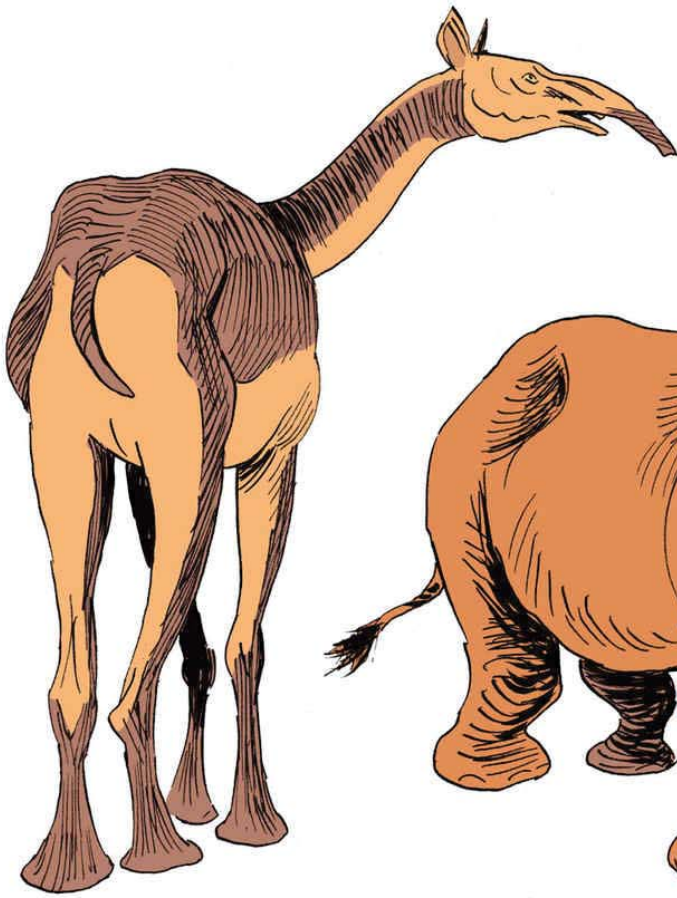
GIANT LIONS...



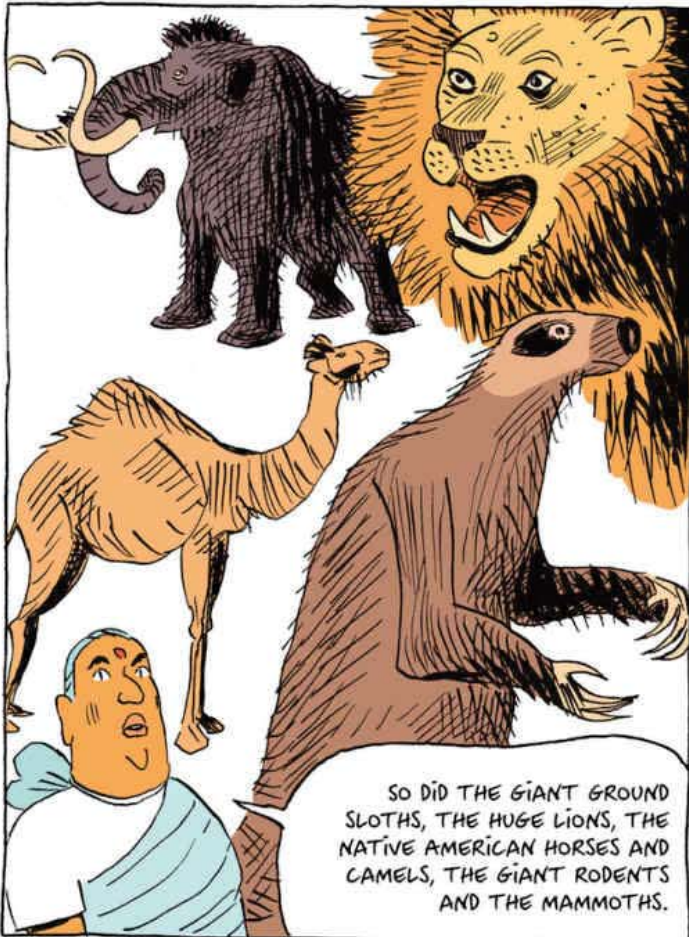
AND DOZENS OF SPECIES THAT DON'T EVEN EXIST TODAY, INCLUDING TERRIFYING SABER-TOOTH CATS...



AND GIANT GROUND SLOTHS THAT WEIGHED UP TO EIGHT TONS AND COULD BE 20 FEET IN HEIGHT!



THERE WAS AN EVEN MORE EXOTIC MENAGERIE OF LARGE MAMMALS, REPTILES AND BIRDS IN SOUTH AMERICA. YOU COULD SAY THE AMERICAS WERE A HUGE LABORATORY OF EVOLUTIONARY EXPERIMENTATION, WHERE MANY ANIMALS AND PLANTS THAT DIDN'T EXIST IN AFRICA OR ASIA HAD EVOLVED AND THRIVED.





FOR DECADES, SCIENTISTS HAVE COMBED THE PLAINS AND MOUNTAINS OF THE AMERICAS, HOPING TO FIND FOSSILIZED BONES FROM ANCIENT CAMELS AND PETRIFIED FECEES OF GIANT LAND SLOTHS!



WHEN THEY FIND WHAT THEY'RE LOOKING FOR, THEY CAREFULLY WRAP THEIR TREASURES AND SEND THEM OFF TO LABS WHERE EVERY BONE AND EVERY FOSSILIZED POOP IS METICULOUSLY STUDIED AND DATED!

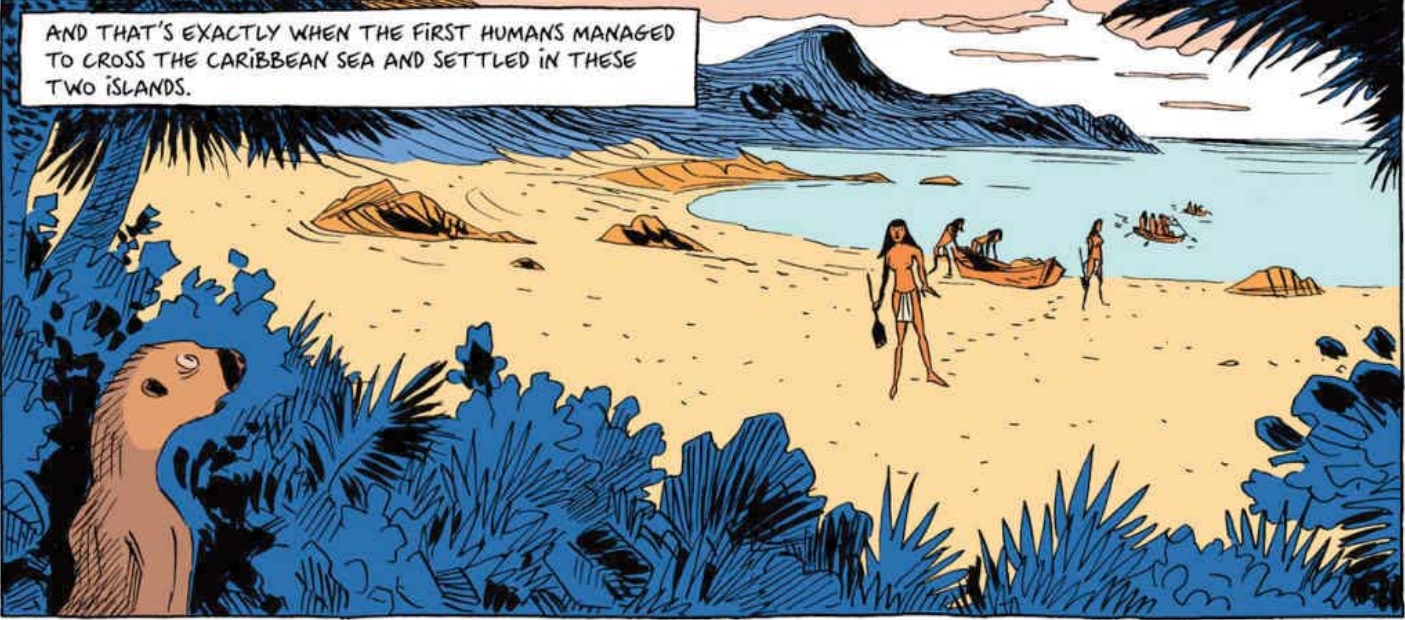


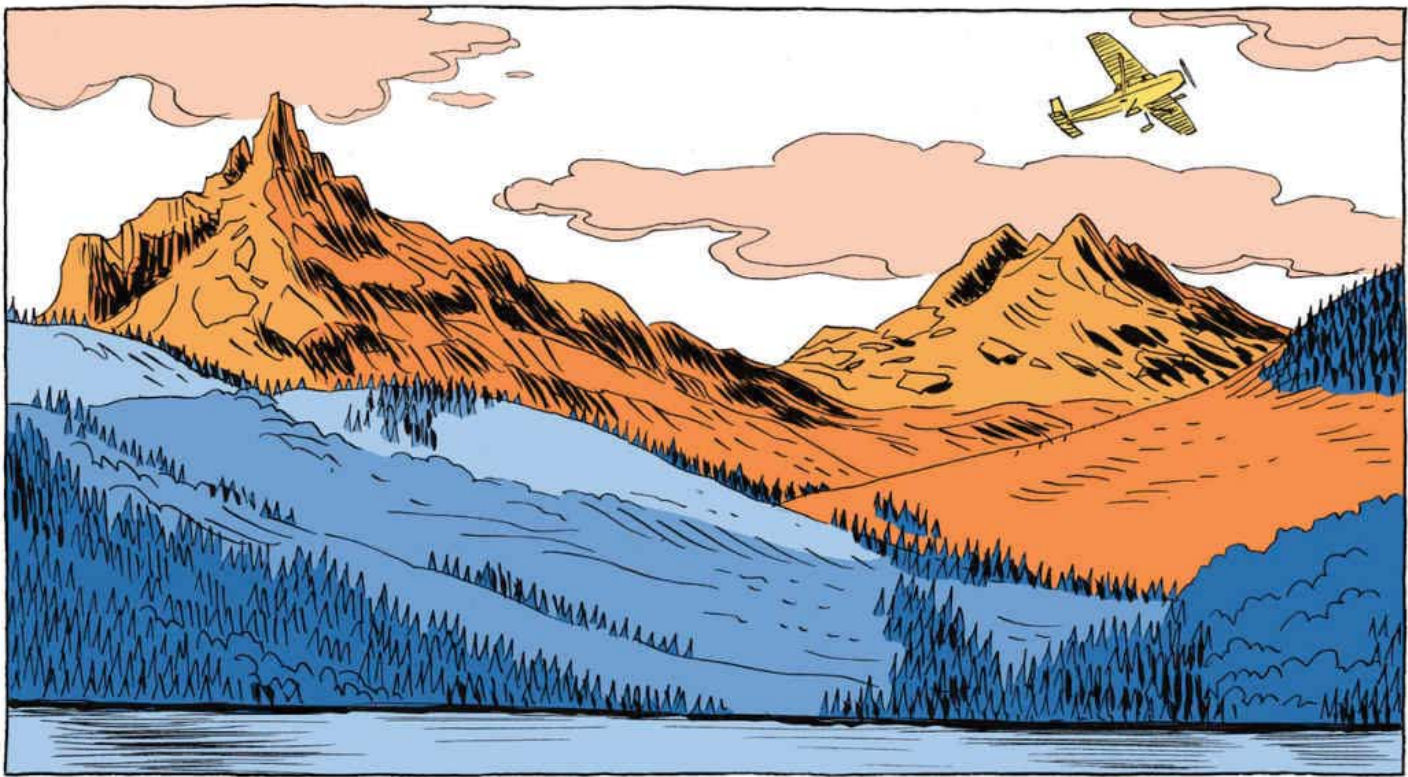
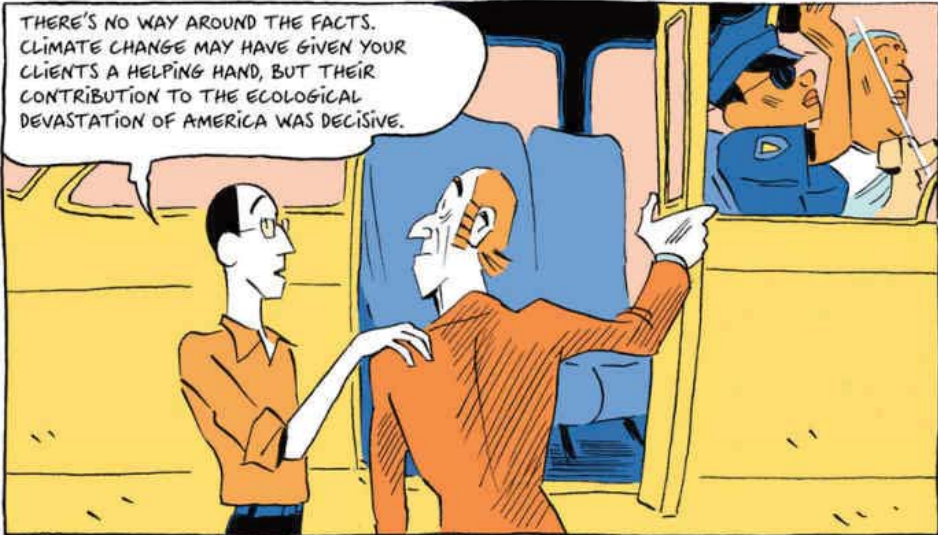
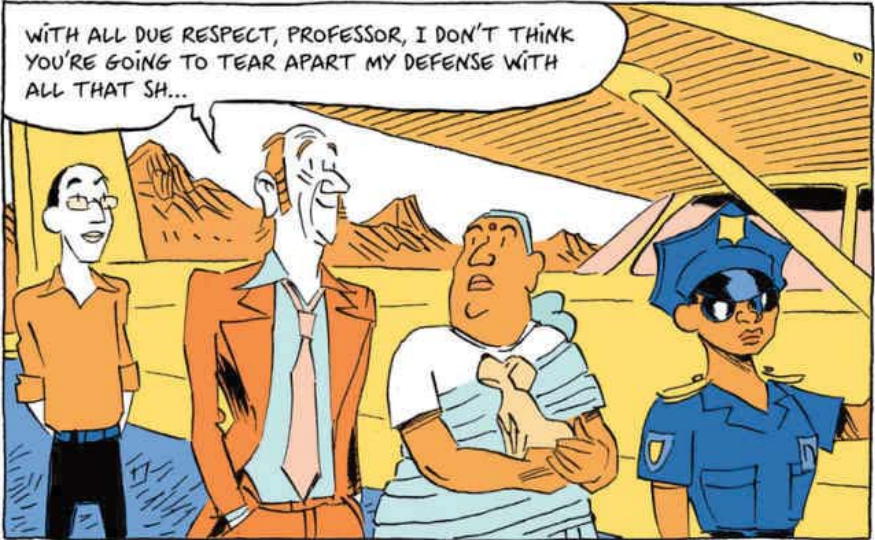
AND ALL THE ANALYSIS JUST KEEPS PRODUCING THE SAME RESULTS: THE MOST RECENT CAMEL BONES AND DUNG BALLS DATE TO THE TIME WHEN HUMANS FLOODED ACROSS AMERICA, BETWEEN ABOUT 14,000 AND 11,000 YEARS AGO.

THERE'S ONLY ONE AREA WHERE RESEARCHERS HAVE FOUND MORE RECENT GROUND SLOTH DUNG BALLS—THE CARIBBEAN. ON SOME ISLANDS, PARTICULARLY CUBA AND HISPANIOLA, THEY FOUND PETRIFIED SLOTH DROPPINGS THAT DATED TO ABOUT 7,000 YEARS AGO.



AND THAT'S EXACTLY WHEN THE FIRST HUMANS MANAGED TO CROSS THE CARIBBEAN SEA AND SETTLED IN THESE TWO ISLANDS.





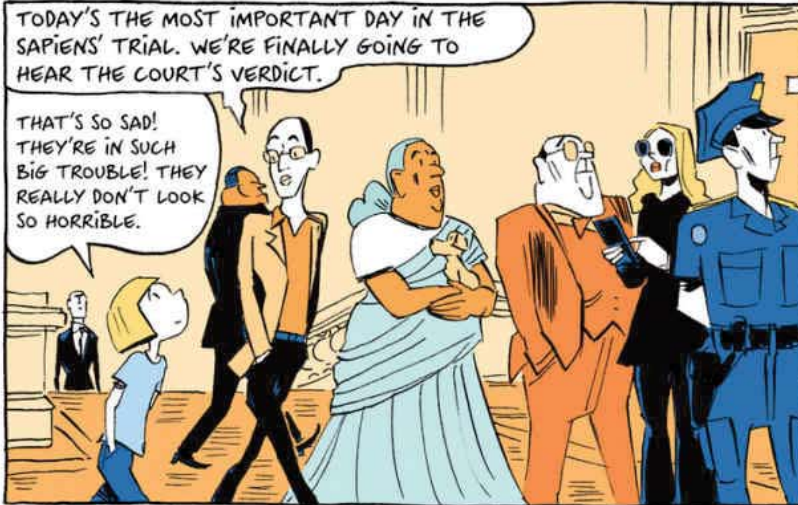
NEW YORK, THREE MONTHS LATER.

IT'S GREAT YOU'RE HERE, ZOE, WE'RE GOING TO WITNESS A HISTORIC EVENT.



TODAY'S THE MOST IMPORTANT DAY IN THE SAPIENS' TRIAL. WE'RE FINALLY GOING TO HEAR THE COURT'S VERDICT.

THAT'S SO SAD! THEY'RE IN SUCH BIG TROUBLE! THEY REALLY DON'T LOOK SO HORRIBLE.



DON'T YOU WORRY, THEY HAVE A LAWYER.

BUT THE EVIDENCE FEELS SO—WHAT'S THE WORD?—OVERWHELMING...

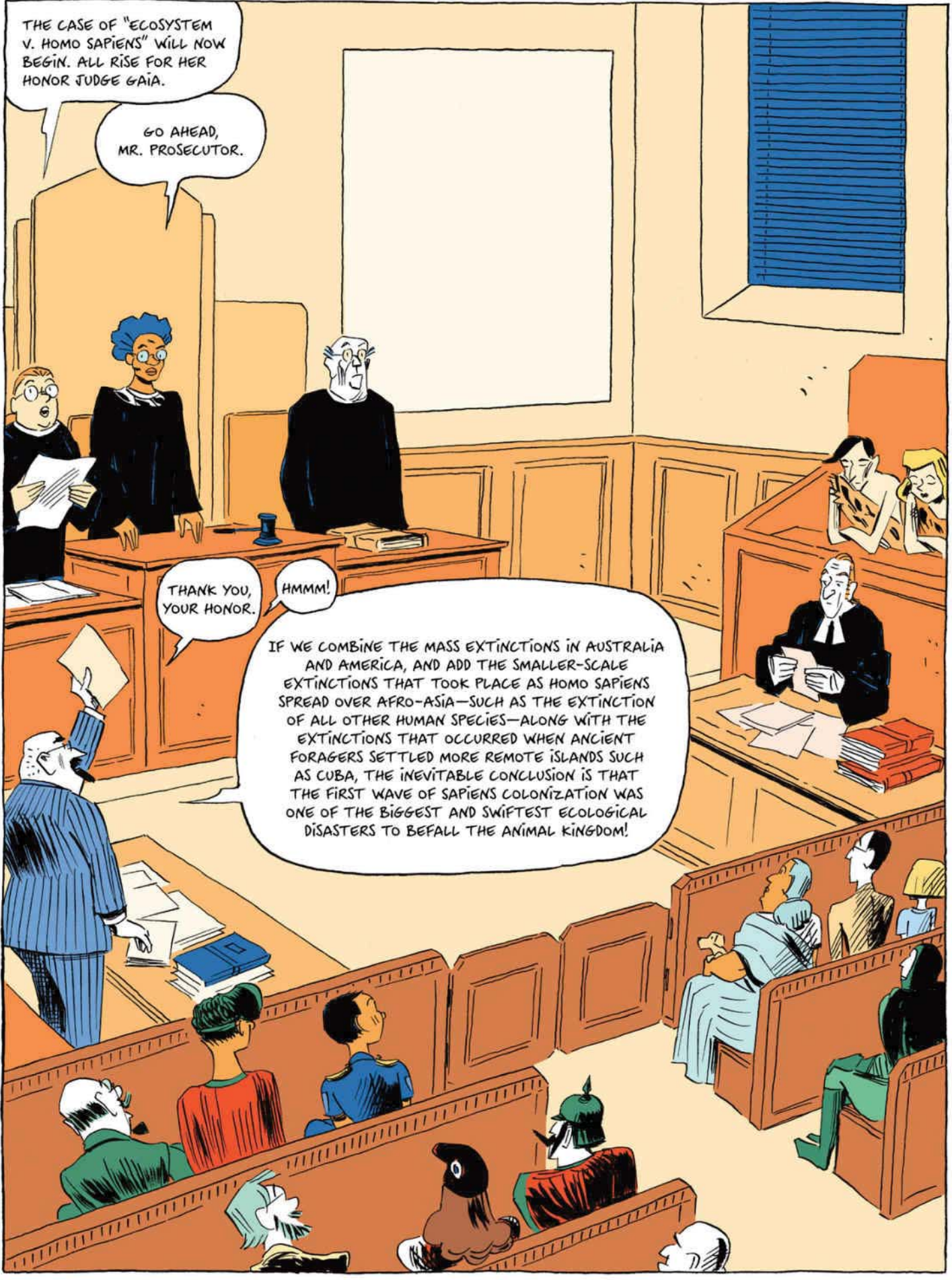


AND THEIR ADAMSKI DOESN'T LOOK ALL THAT SMART...



DON'T BE FOOLED BY APPEARANCES... COME ON, LET'S GO IN, IT'S ABOUT TO START.





THE CASE OF "ECOSYSTEM V. HOMO SAPIENS" WILL NOW BEGIN. ALL RISE FOR HER HONOR JUDGE GAÏA.

GO AHEAD, MR. PROSECUTOR.

THANK YOU, YOUR HONOR.

HMMM!

IF WE COMBINE THE MASS EXTINCTIONS IN AUSTRALIA AND AMERICA, AND ADD THE SMALLER-SCALE EXTINCTIONS THAT TOOK PLACE AS HOMO SAPIENS SPREAD OVER AFRO-ASIA—SUCH AS THE EXTINCTION OF ALL OTHER HUMAN SPECIES—ALONG WITH THE EXTINCTIONS THAT OCCURRED WHEN ANCIENT FORAGERS SETTLED MORE REMOTE ISLANDS SUCH AS CUBA, THE INEVITABLE CONCLUSION IS THAT THE FIRST WAVE OF SAPIENS COLONIZATION WAS ONE OF THE BIGGEST AND SWIFTEST ECOLOGICAL DISASTERS TO BEFALL THE ANIMAL KINGDOM!

HARDEST HIT WERE LARGE FUR-COVERED CREATURES. AT THE TIME OF THE COGNITIVE REVOLUTION, THE PLANET WAS HOME TO SOME 200 GENERA OF TERRESTRIAL MAMMALS THAT WEIGHED MORE THAN 100 POUNDS.



BY THE TIME OF THE AGRICULTURAL REVOLUTION, ONLY ABOUT 100 REMAINED. THE ACCUSED BROUGHT ABOUT THE EXTINCTION OF NEARLY HALF THE PLANET'S LARGE ANIMALS LONG BEFORE HUMANS INVENTED THE WHEEL, WRITING OR IRON TOOLS!



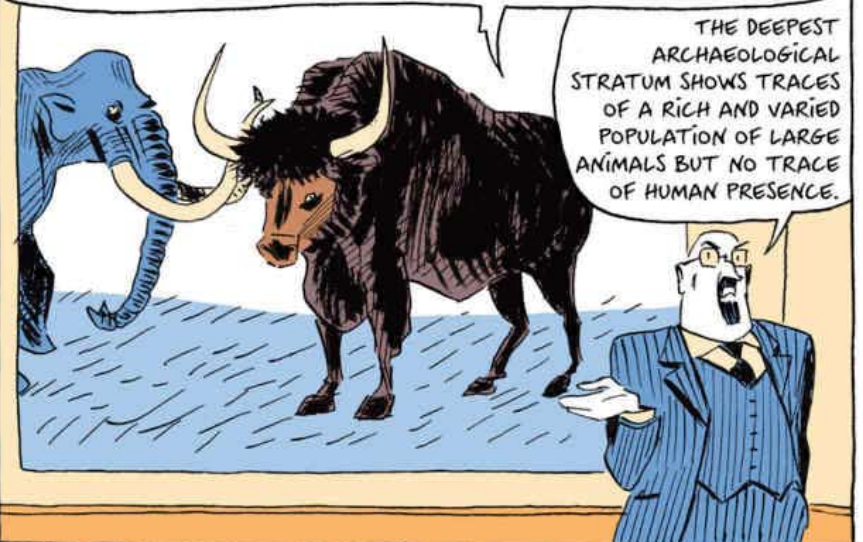
BUT, LADIES AND GENTLEMEN OF THE JURY, THERE'S WORSE! BECAUSE THE ACCUSED CONTINUED WITH THEIR KILLING SPREE LONG AFTER THAT!!!



AFTER THE AGRICULTURAL REVOLUTION, THE ACCUSED DIVERSIFIED INTO FARMING. BUT EVEN AS FARMERS, THEY CONTINUED TO COLONIZE NEW TERRITORIES AND TO DRIVE THE INDIGENOUS FAUNA TO EXTINCTION.



AND THE ACCUSED USED THE SAME MODUS OPERANDI EVERY TIME! ARCHAEOLOGICAL FINDS ON ISLAND AFTER ISLAND TELL THE SAME SAD STORY.

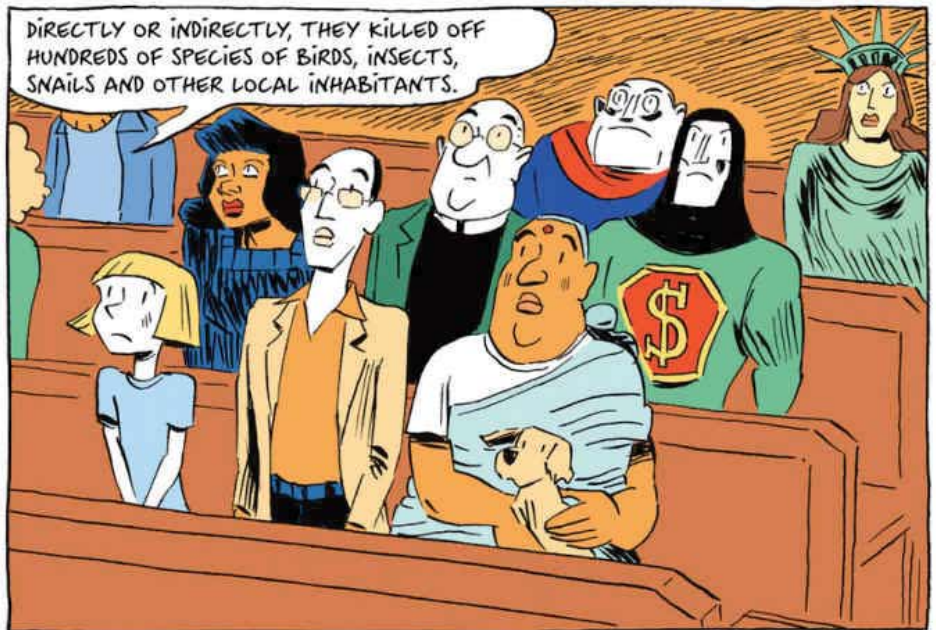
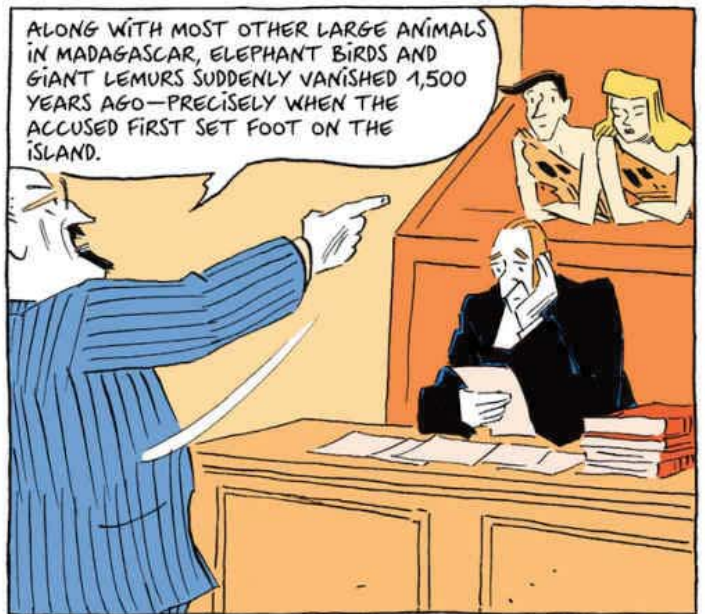
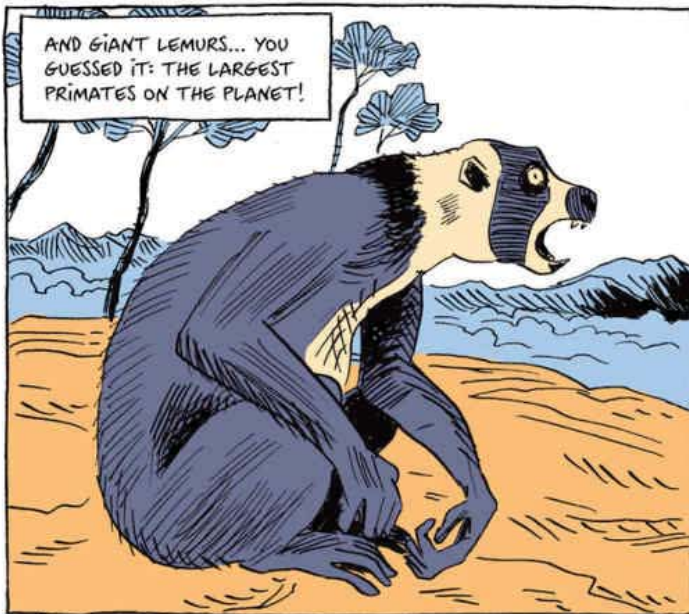
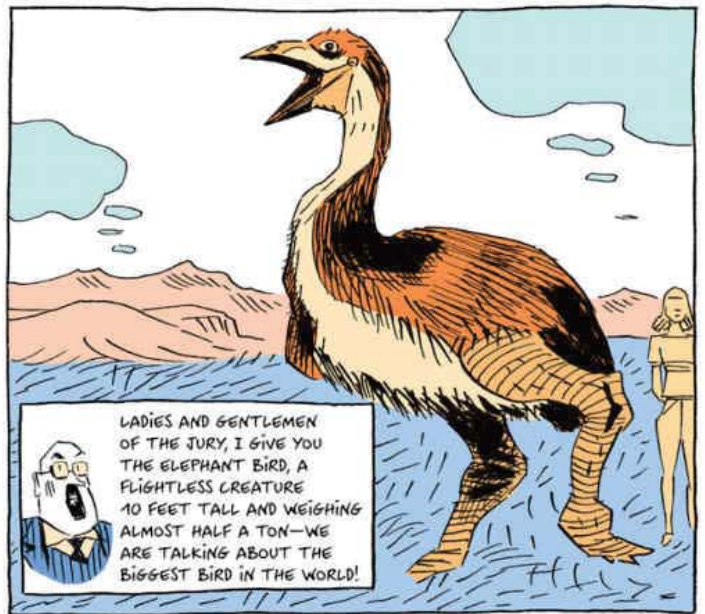
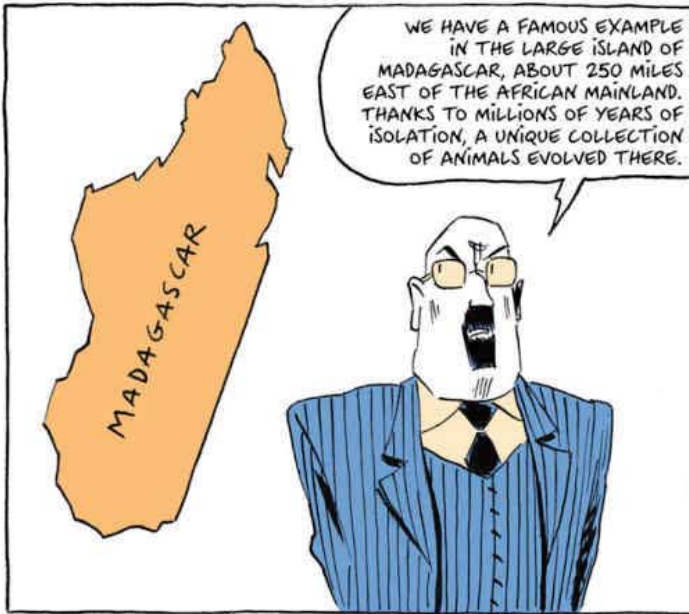


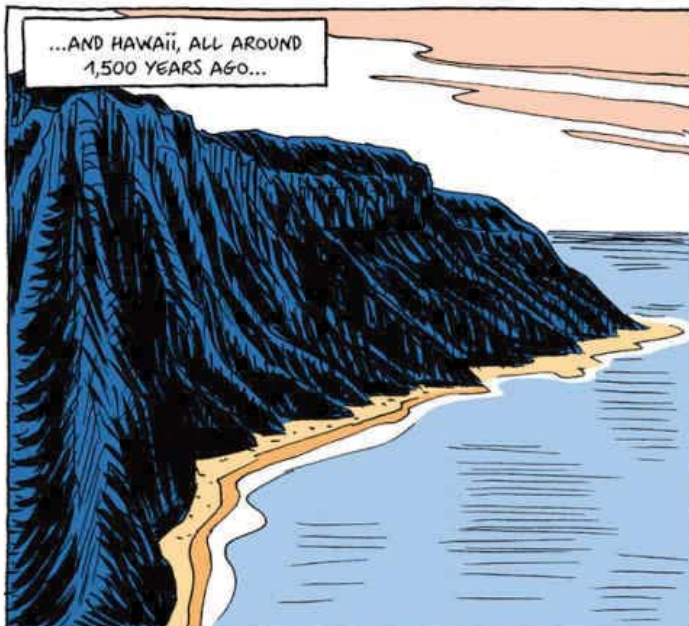
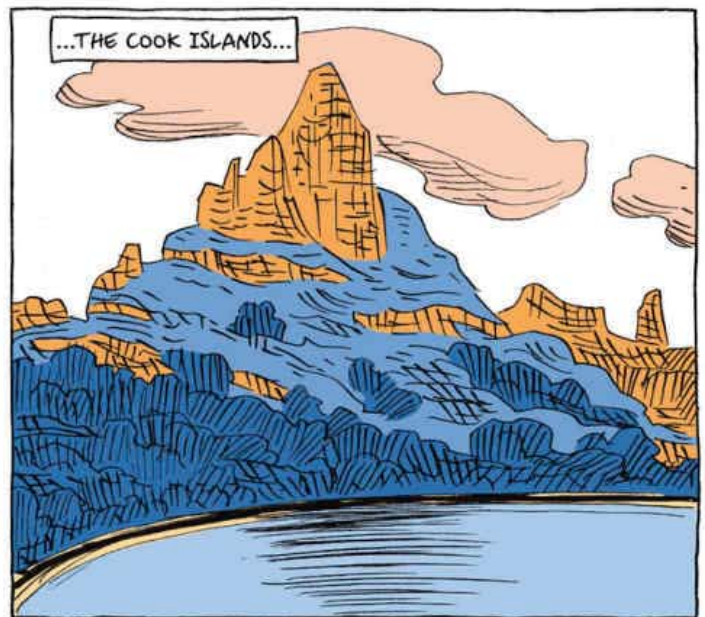
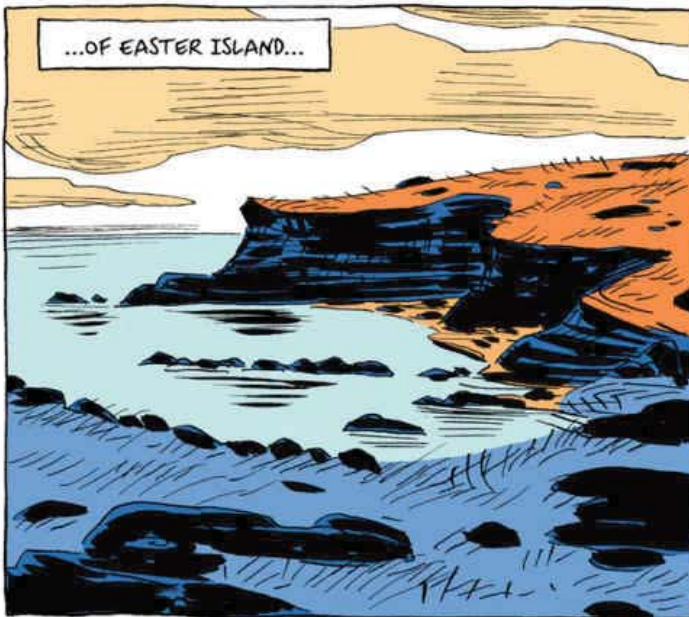
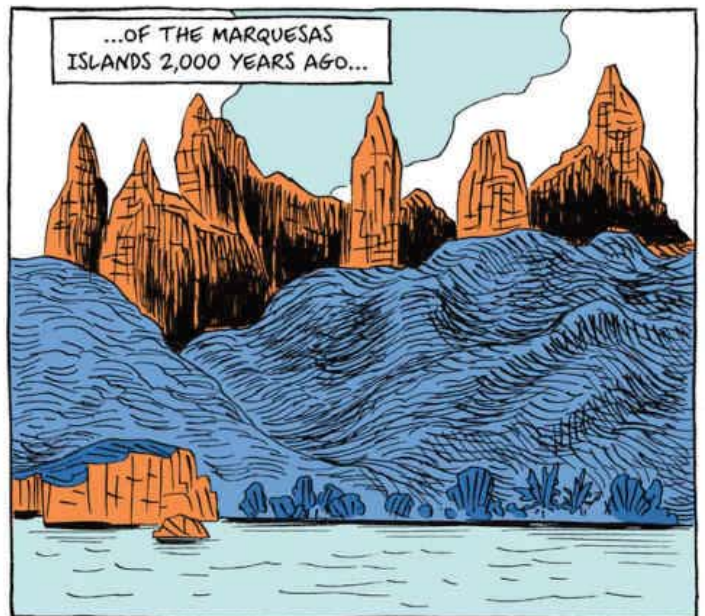
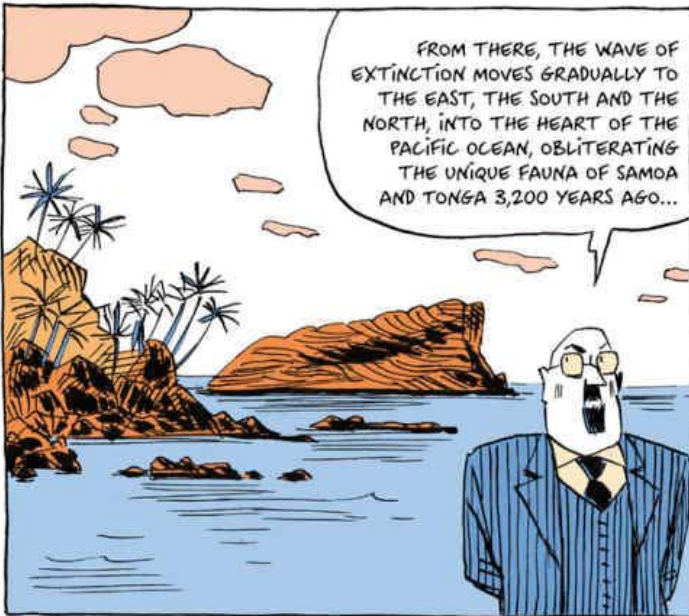
AND THEN COME THE FIRST SIGNS OF THE SAPIENS GANG AT THE CRIME SCENE: A HUMAN BONE, A SPEARHEAD, A FRAGMENT OF POTTERY OR PERHAPS A HUMAN TOOTH.

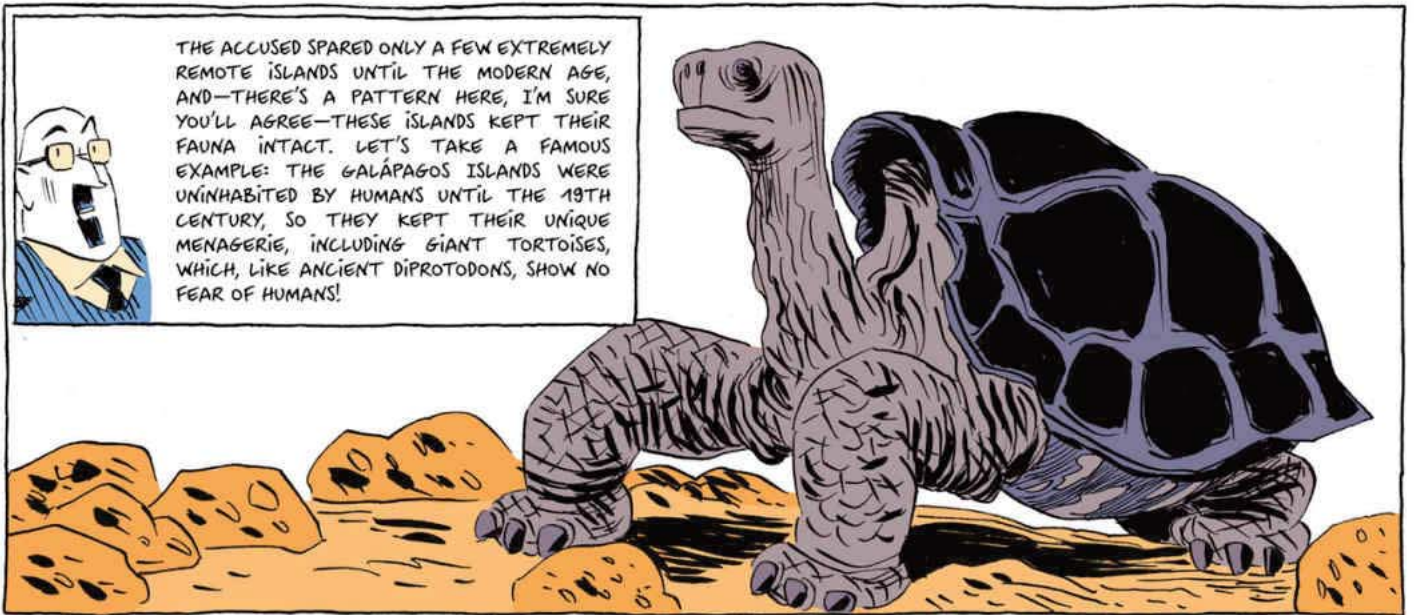
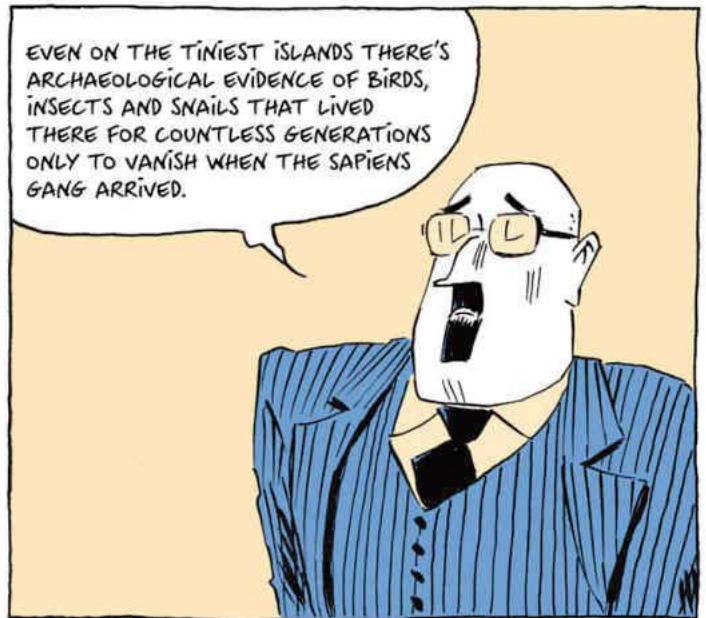
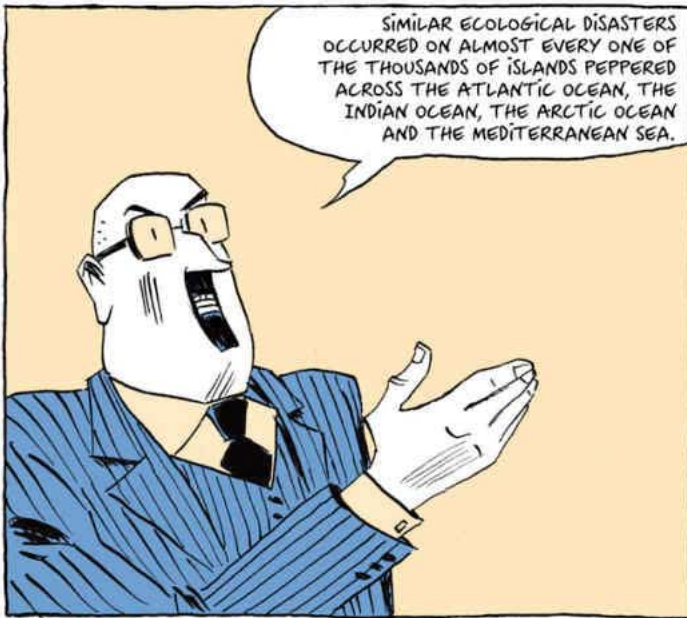


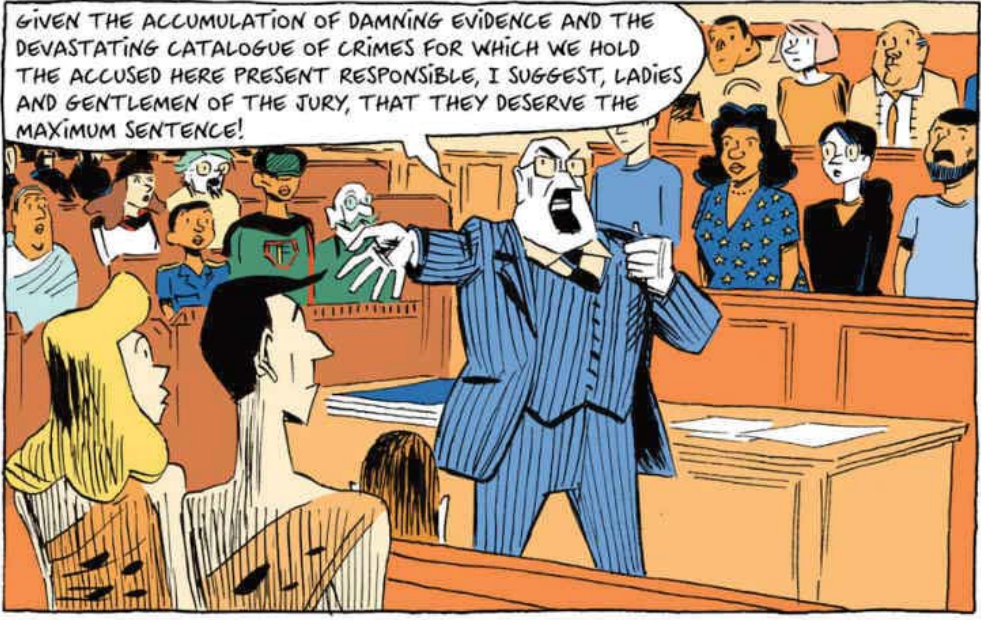
AFTER THAT IT'S ALWAYS THE SAME SCENARIO: THE ISLAND FILLS UP WITH HUMAN HOUSES AND FARMS WHILE THE LARGE ANIMALS—AND A GOOD MANY OF THE SMALLER ONES—ARE WIPED OUT!







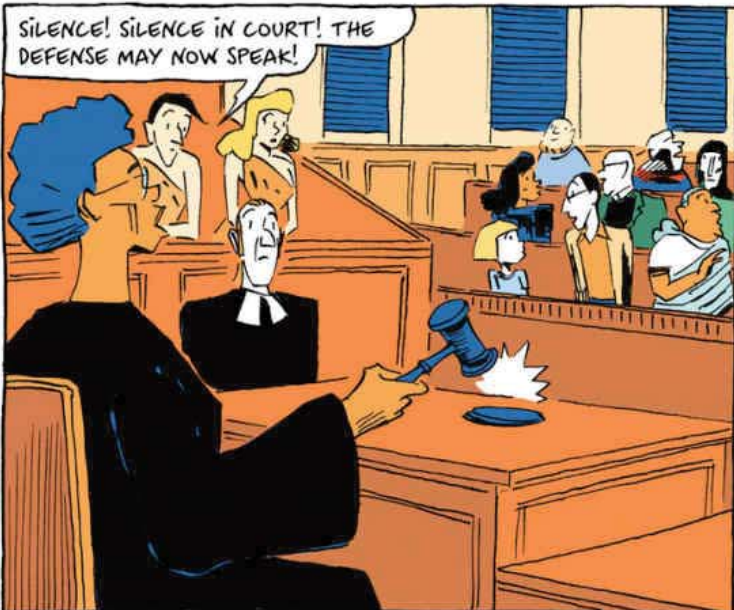




GIVEN THE ACCUMULATION OF DAMNING EVIDENCE AND THE DEVASTATING CATALOGUE OF CRIMES FOR WHICH WE HOLD THE ACCUSED HERE PRESENT RESPONSIBLE, I SUGGEST, LADIES AND GENTLEMEN OF THE JURY, THAT THEY DESERVE THE MAXIMUM SENTENCE!



OH NO!!

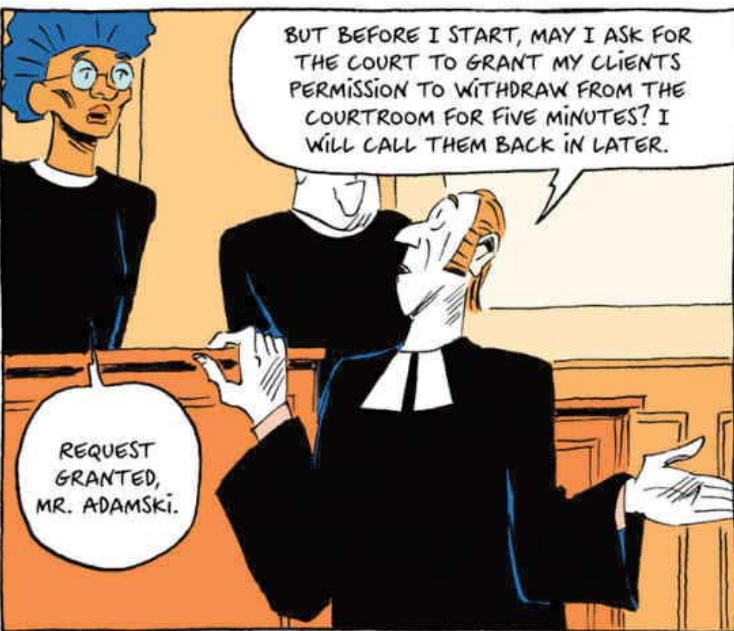


SILENCE! SILENCE IN COURT! THE DEFENSE MAY NOW SPEAK!



PLEASE, MR. ADAMSKI, GO AHEAD.

AHEM... THANK YOU, YOUR HONOR...



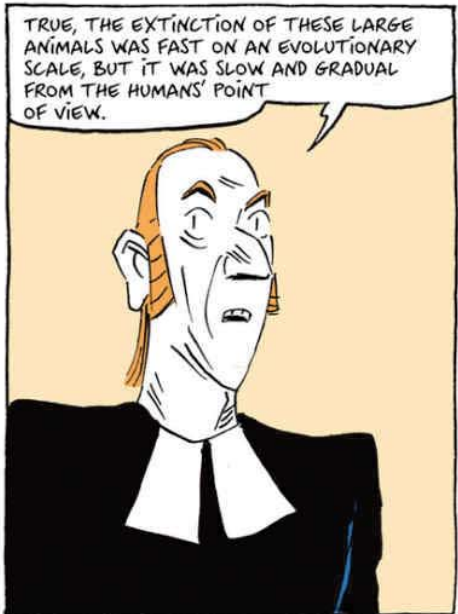
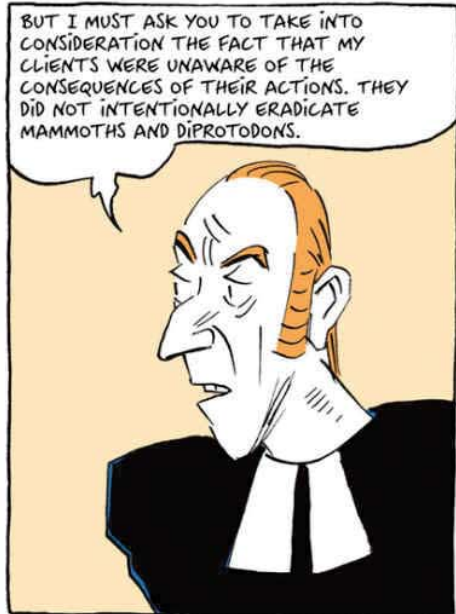
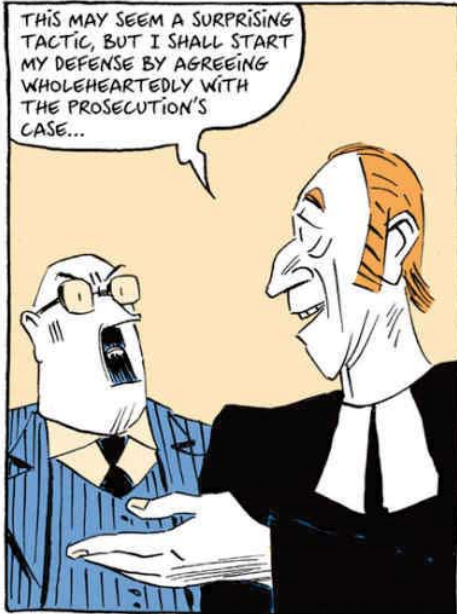
BUT BEFORE I START, MAY I ASK FOR THE COURT TO GRANT MY CLIENTS PERMISSION TO WITHDRAW FROM THE COURTROOM FOR FIVE MINUTES? I WILL CALL THEM BACK IN LATER.

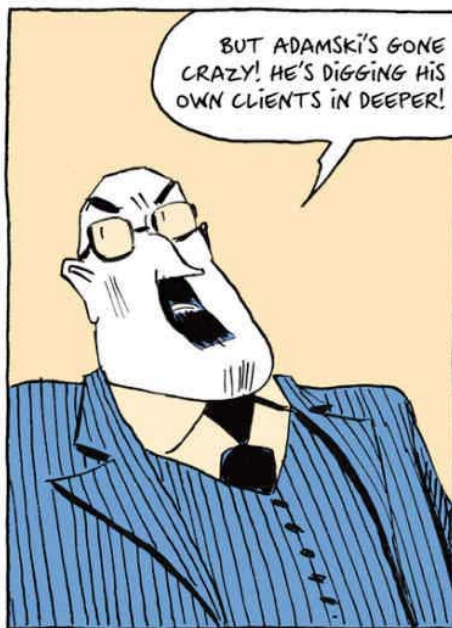
REQUEST GRANTED, MR. ADAMSKI.



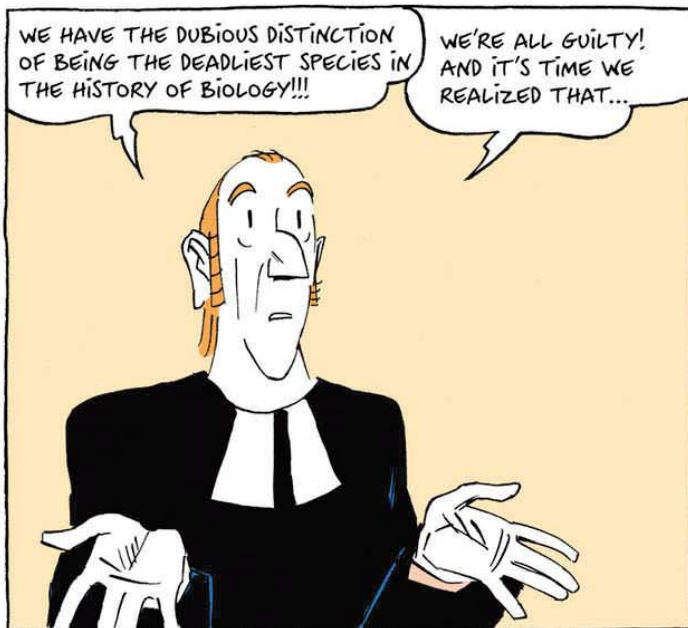
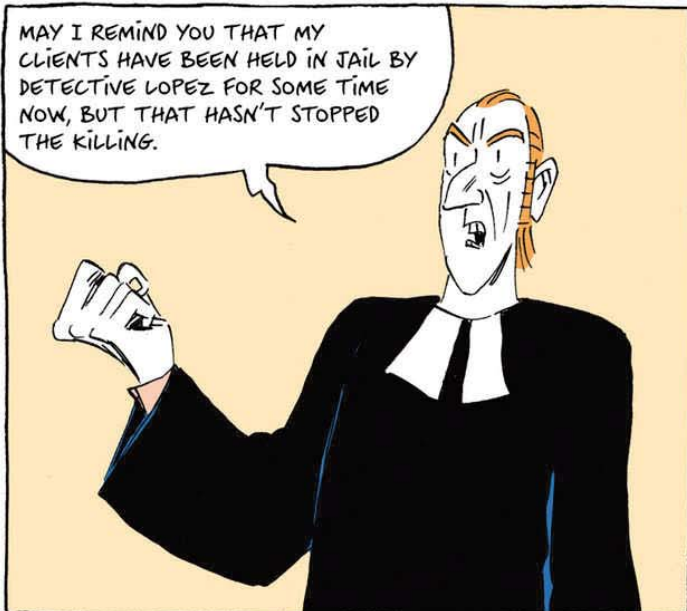
THANK YOU, YOUR HONOR.

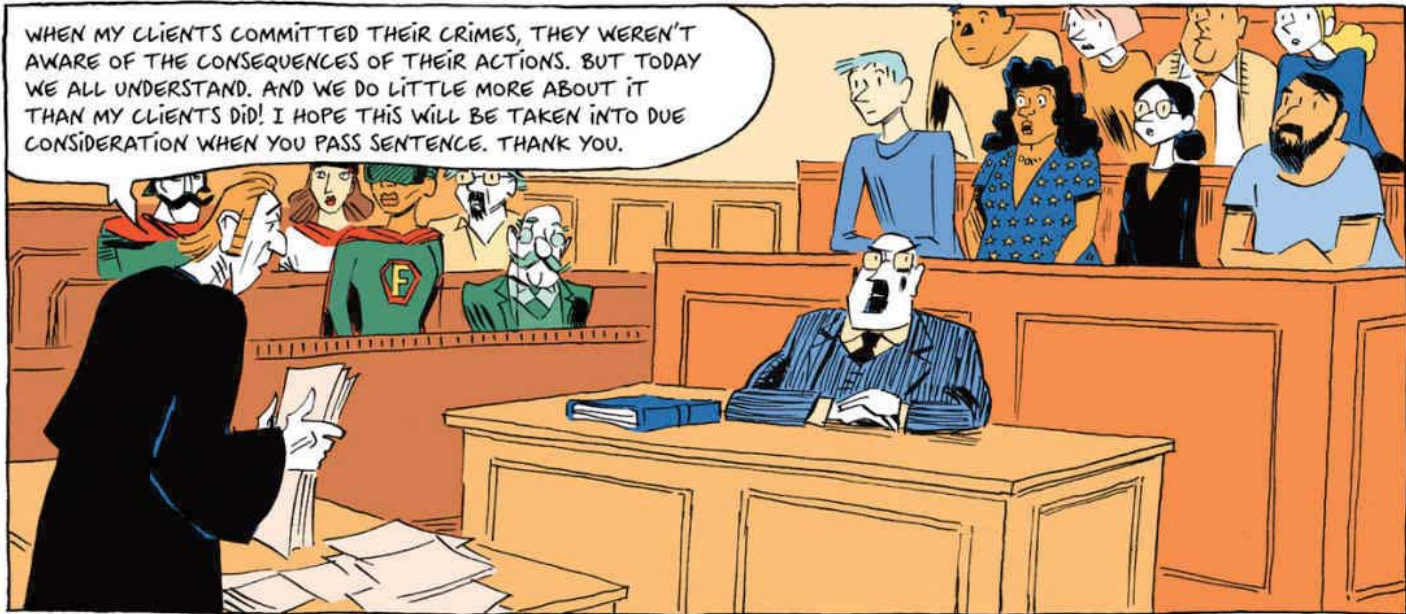
I WON'T EVEN ATTEMPT TO CONTRADICT THE PROSECUTOR'S DAZZLING OPENING STATEMENT. THE EVIDENCE IS TOO OVERWHELMING...







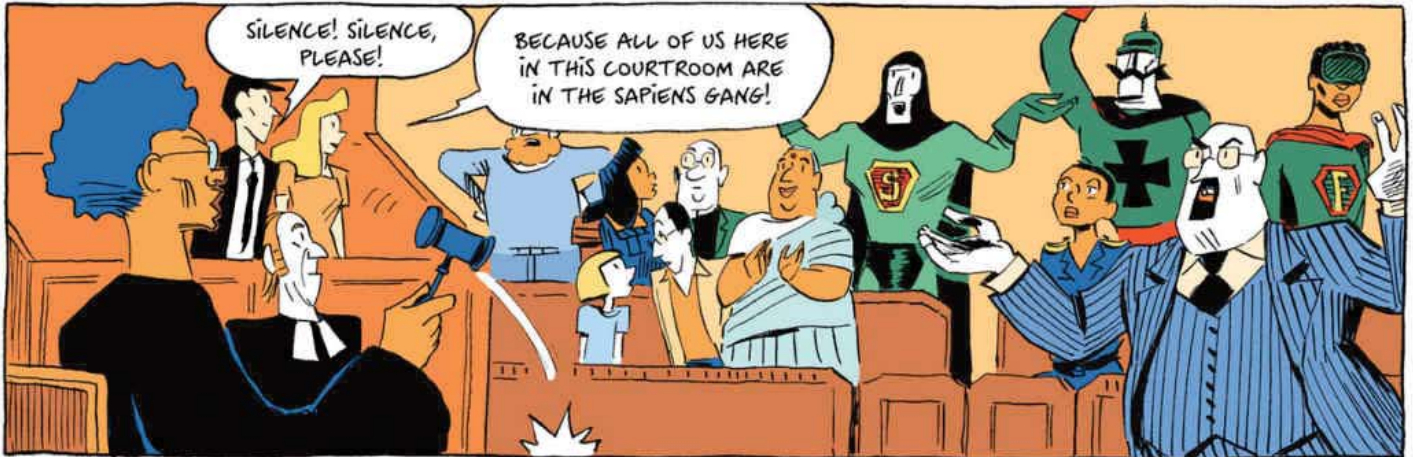






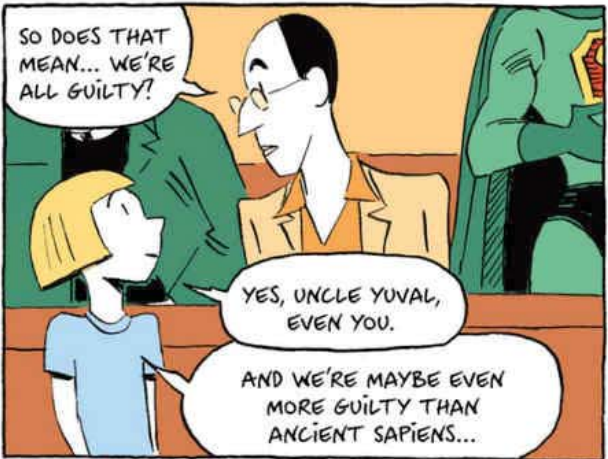
BEFORE PROCEEDING, I SHOULD ADMIT TO YOU THAT I TOO AM A MEMBER OF THE SAPIENS GANG...

OOOOHHHH!!!!



SILENCE! SILENCE, PLEASE!

BECAUSE ALL OF US HERE IN THIS COURTROOM ARE IN THE SAPIENS GANG!



SO DOES THAT MEAN... WE'RE ALL GUILTY?

YES, UNCLE YUVAL, EVEN YOU.


AND WE'RE MAYBE EVEN MORE GUILTY THAN ANCIENT SAPIENS...



AS I CANNOT BE IMPARTIAL...



PSSST... IF YOU NEED A GOOD LAWYER...



...I WILL THEREFORE BE REFERRING THIS CASE TO THE SUPREME COURT OF THE FUTURE. WE ARE ALL RESPONSIBLE, AND WE WILL ALL HAVE TO ANSWER FOR OUR ACTIONS.



COMING SOON IN SAPIENS!

THE GREATEST SWINDLE OF ALL TIME
OR HOW SUPER-SAPIENS WAS CHEATED BY THE WHEAT-MONSTER!



HAVING DEFEATED THE NEANDERTHALS, THE MAMMOTHS AND THE DIPROTODONS, SUPER-SAPIENS FINALLY MEETS A WORTHY OPPONENT!
FIND OUT HOW A HUMBLE PLANT TRICKED SUPER-SAPIENS AND ENSLAVED HUMANKIND!!!

