EDWARD ROSS

GAMISH

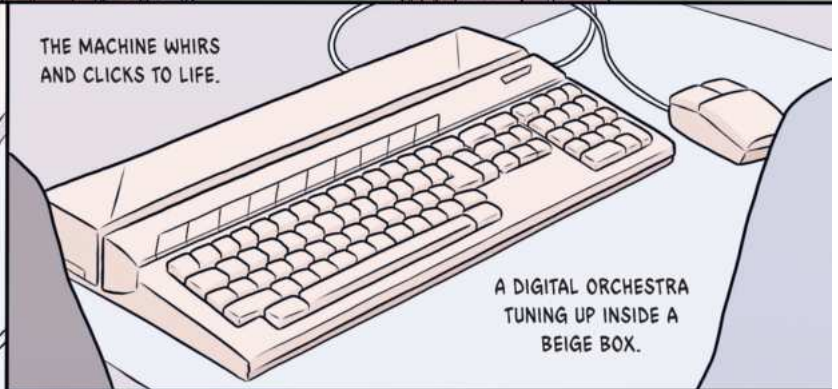## A GRAPHIC HISTORY OF GAMING

PARTICULAR BOOKS

1991. EDINBURGH.

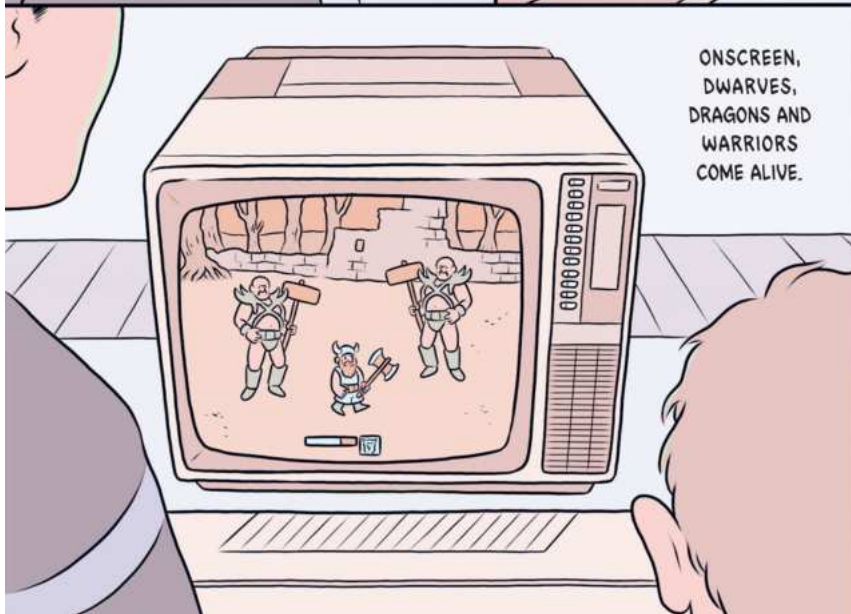MY BROTHER BLOWS THE DUST OFF HIS **ATARI ST** AND PLUGS IT IN.

THE MACHINE WHIRS AND CLICKS TO LIFE.

A DIGITAL ORCHESTRA TUNING UP INSIDE A BEIGE BOX.

SLOTTING IN A FLOPPY DISK, HE LOADS UP **GOLDEN AXE**.

ONSCREEN, DWARVES, DRAGONS AND WARRIORS COME ALIVE.

IT'S MY FIRST TASTE OF VIDEO GAMES AND I'M ALREADY HOOKED.

IT'S ALMOST 20 YEARS LATER THAT I BUY MY FIRST GAMES CONSOLE.

SURE, I'D GROWN UP ON A DIET OF GAMES, BUT ALWAYS AT A FRIEND'S HOUSE.

IAIN'S **MEGA DRIVE**. PAT'S **SNES**.

WE BORROWED A NINTENDO 64 ONE SUMMER AND I SPENT THE HOLIDAY OBSESSIVELY EXPLORING **GOLDENEYE**. HYPNOTIZED BY THE GUNPLAY. THE REALISM OF THE SPACES. THE THRILL OF DISCOVERY.

AND AS TEENAGERS WE'D MEET EVERY WEEKEND, SPENDING HOURS AT PLAY TORMENTING **THE SIMS**, OR CRAMMED ROUND A PC COLLECTIVELY CONTROLLING **HALF-LIFE**'S NOW HAPLESS HERO GORDON FREEMAN.

BUT HERE I WAS AN ADULT, DELVING INTO VIDEO GAMES AGAIN.

I STARTED TO REALIZE THAT GAMES WERE MORE THAN JUST A PASTIME.

MORE THAN JUST ENTERTAINMENT.

THERE WAS SOMETHING POWERFUL THERE.

I BEGAN TO ASK MYSELF, WHAT IS IT ABOUT GAMES THAT MAKE THEM SO SPECIAL? WHY DO WE PLAY? WHAT EFFECTS DO GAMES HAVE ON US? AND WHERE DID GAMING BEGIN?

SITTING DOWN TO MAKE THIS BOOK, I DECIDED TO FIND OUT.

HOMO LUDENS

JOHAN HU

GAMISH

A GRAPHIC HISTORY OF GAMING

WHERE DID
GAMING BEGIN?

MAYBE IT'S ALWAYS
BEEN WITH US.

BEFORE THE MICROCHIP

BEFORE THE GAME BOARD

BEFORE WRITING

BEFORE ART ITSELF

THERE WAS THE HUMAN ANIMAL.

WALKING UPRIGHT, ADEPT WITH TOOLS
AND ARMED WITH EARLY SPEECH, THE
FIRST HUMANS LIVED AS PRECARIOUS
AN EXISTENCE AS ANY ANIMAL.

AND LIKE MANY ANIMALS, WE **PLAYED**.

5

THROUGHOUT THE ANIMAL KINGDOM, WE SEE WIDESPREAD EVIDENCE OF ANIMAL PLAY.
PRIMATES SWING AND CHASE, CUBS STALK AND WRESTLE, AND BIRDS DANCE.
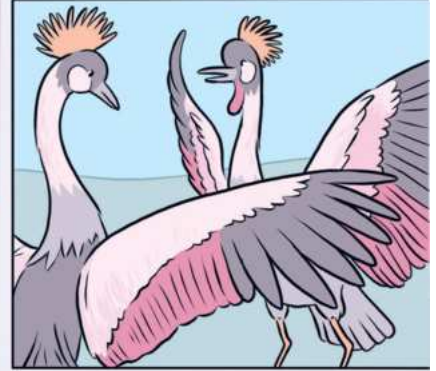
AND AS INSTINCT DRIVES ANIMALS TO PLAY, SO TOO DID IT DRIVE HUMANS. LIKE THE WRESTLING OF APES OR WOLF CUBS, GAMES LIKE TAG OR HIDE-AND-SEEK SIMULATE A LIFE-OR-DEATH STRUGGLE.
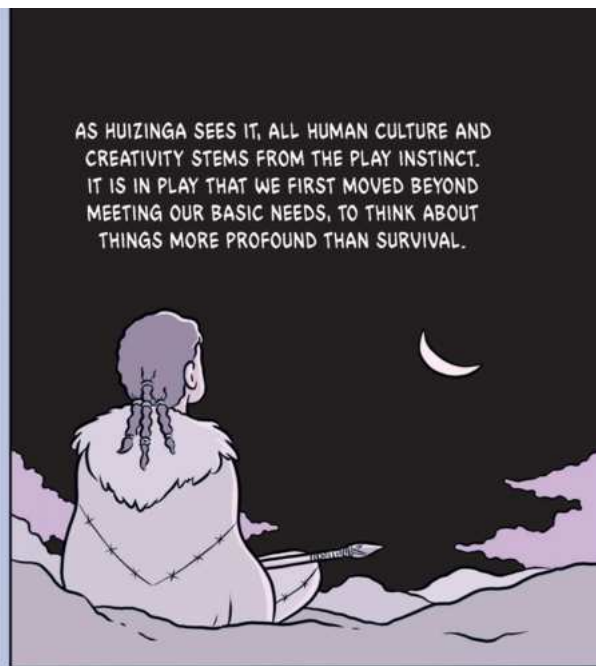
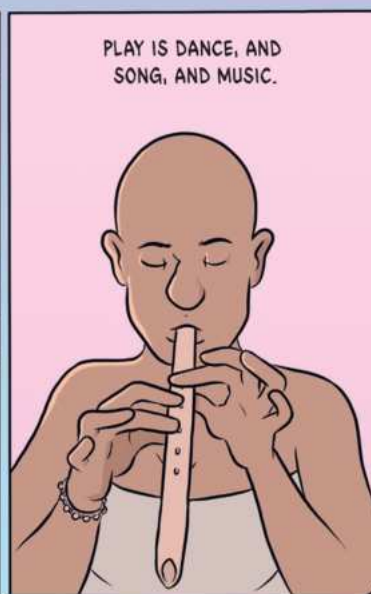IN OUR EARLIEST PLAY WE HUNT. WE FLEE. WE HIDE. WE FIGHT.
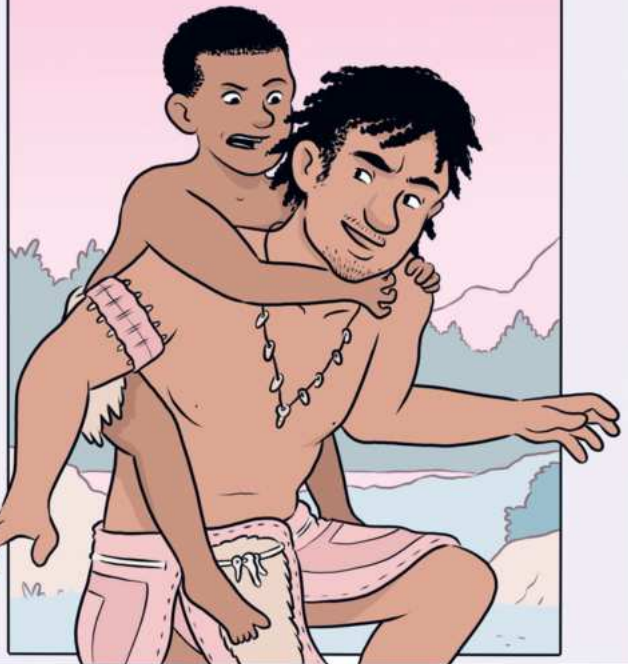
TOO YOUNG TO JOIN THE HUNT OR DEFEND OUR KIN, PLAY OFFERS US A TRAINING GROUND WHERE LAUGHTER AND HAPPY SCREAMS MASK A DEADLY SERIOUS PURPOSE.

6

WHILE OUR INSTINCT FOR PLAY HELPED US SURVIVE IN A VIOLENT WORLD, IT'S CLEAR THAT PLAY HAS HAD A FAR LARGER ROLE IN HUMAN DEVELOPMENT.

FOR THE HISTORIAN **JOHAN HUIZINGA**, OUR NATURAL DRIVE TO PLAY WAS THE CRUCIAL FACTOR IN OUR DEVELOPMENT AS A SPECIES.

AS HUIZINGA SEES IT, ALL HUMAN CULTURE AND CREATIVITY STEMS FROM THE PLAY INSTINCT. IT IS IN PLAY THAT WE FIRST MOVED BEYOND MEETING OUR BASIC NEEDS, TO THINK ABOUT THINGS MORE PROFOUND THAN SURVIVAL.

IN PLAY WE EXPERIMENT AND EXPLORE, CHALLENGE AND COMPETE. WE TEST OUT IDEAS, STRATEGIES AND PHILOSOPHIES, AND SEE IF THEY WORK. WE IMPOSE RULES TO LIMIT OURSELVES, OR TRANSGRESS RULES TO SEE WHAT HAPPENS.

PLAY IS PAINTING A LEGENDARY HUNT ON A CAVE WALL.

PLAY IS RUBBING TWO STICKS TOGETHER TO OBSERVE THE RESULTS.

PLAY IS DANCE, AND SONG, AND MUSIC.

PLAY IS THE SPARK OF CREATIVITY AND EXPERIMENTATION THAT HAS ALLOWED US TO DEVELOP AND EXPAND SO SUCCESSFULLY AS A SPECIES.

WITHOUT PLAY, WE WOULD STILL BE LIVING AS ANIMALS.

WHATEVER THIS GAME WAS, IT WAS CREATED DURING A CRUCIAL PERIOD IN HUMANITY'S DEVELOPMENT. AROUND 12,000 YEARS AGO, AS THE ICE AGE RETREATED, HUMANKIND ENTERED A PERIOD OF UNPRECEDENTED GROWTH AND DEVELOPMENT.

IN SETTLEMENTS LIKE THE ONE IN JORDAN, HUMAN CREATIVITY AND EXPERIMENTATION FLOURISHED. OUR **PLAYFUL NATURE** LED TO AN EXPLOSION OF ART, CULTURE, TECHNOLOGY, AND OF COURSE THE EMERGENCE OF THE FIRST GAMES.

WITH AGRICULTURE AND THE DOMESTICATION OF ANIMALS CAME THE FORMATION OF MORE PERMANENT SETTLEMENTS, AND WITH THAT CAME MORE FREE TIME.

IN THE PREHISTORIC WORLD, WHATEVER CAME TO HAND COULD BE TURNED INTO A PLAYING PIECE.

GAME BOARDS WERE SCRATCHED INTO THE DIRT.

SEEDS, SHELLS AND PEBBLES ACTED AS RUDIMENTARY PAWNS AND TOKENS.

KNUCKLE BONES, TUSKS AND TEETH WERE ROLLED LIKE DICE.

AND WITH HUMAN SOCIETY MOVING SWIFTLY AWAY FROM ITS HUNTER-GATHERER ORIGINS, SOCIAL SKILLS WERE BECOMING AS IMPORTANT AS PHYSICAL ONES.
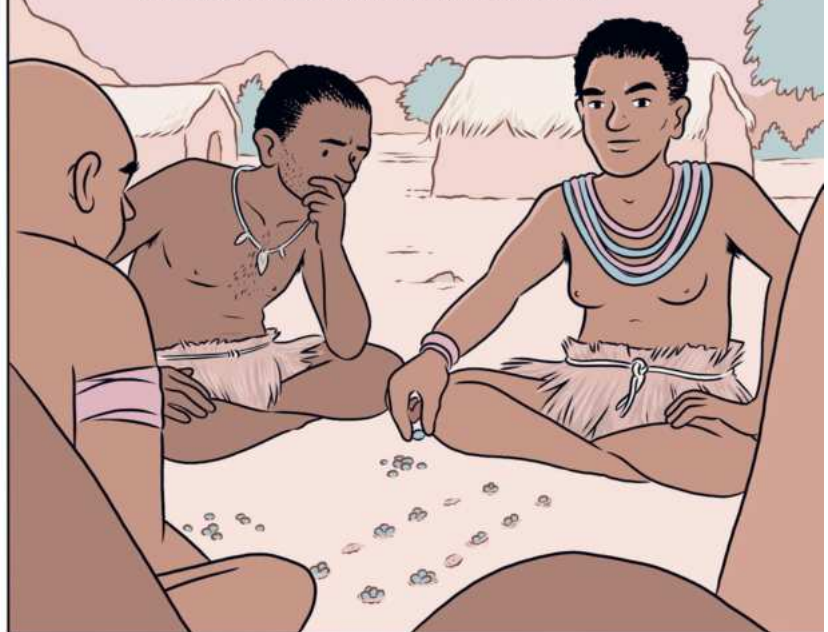
DECEPTIVELY SIMPLE ON THE SURFACE, GAMES LIKE **MANCALA** GAVE PLAYERS A CHANCE TO COMPETE WITH FRIENDS AND FAMILY, AND TEST SKILLS OF BLUFF AND SOCIAL INTUITION AWAY FROM THE HIGH STAKES OF DAILY LIFE.
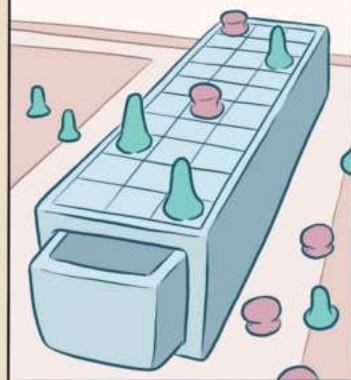
AS GREAT CIVILIZATIONS EMERGED FROM SETTLED SOCIETY, ACROSS THE WORLD GAMING CONTINUED TO THRIVE AND SPREAD.

INVENTED IN ANCIENT EGYPT AROUND 3300 BCE, THE GAME OF **SENET** WAS PLAYED BY PEASANTS AND PHARAOHS ALIKE.

SENET WAS ENTANGLED WITH ANCIENT EGYPTIAN SPIRITUAL LIFE. THE GAME RECREATED THE JOURNEY OF THE SOUL TO THE AFTERLIFE.

AS ARCHAEOLOGIST **PETER PICCIONE** ARGUES, THE EGYPTIANS SAW THE GAME AS 'A PHYSICAL BRIDGE STRETCHING FROM THE SPACE OF THE LIVING INTO THE SPACE OF THE DEAD', ALLOWING THEM TO COMMUNE WITH THE AFTERLIFE OR EVEN PLAY AGAINST THEIR OWN SOUL.
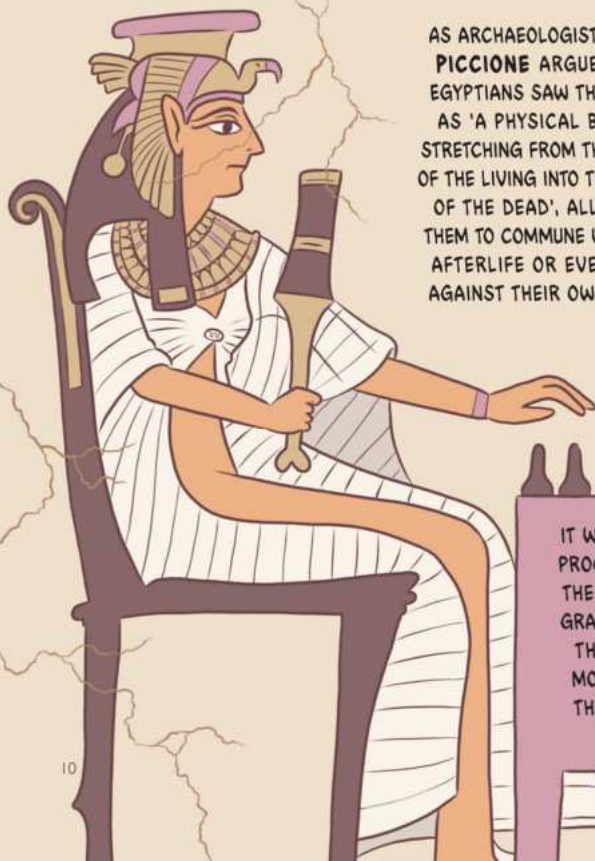
FOR THE ANCIENT EGYPTIANS **SENET** WAS SO IMPORTANT ITS IMAGE WAS PAINTED ON THE WALLS OF THEIR TOMBS, ITS RITUALS INSCRIBED IN THE EGYPTIAN BOOK OF THE DEAD.

IT WAS A CRUCIAL PROCESS. PLAYING THE GAME WOULD GRANT THE PLAYER THE POWER TO MOVE FREELY IN THE AFTERLIFE.

SENET WASN'T THE ONLY GAME TO HAVE A SPIRITUAL SIDE.

THE ANCIENT MESOAMERICAN GAME OF **PATOLLI** WAS A GAME OF LUCK OVERSEEN BY THE GOD MACUILXOCHITL.

MEANWHILE, IN ANCIENT INDIA THE HINDU GAME **GYAN CHAUPAR** — THE GAME OF WISDOM — RECREATED THE STRUGGLE TO AVOID VICES AND REACH HEAVEN.

BEFORE A MATCH, PLAYERS WOULD INVOKE THIS GOD OF GAMES, WHO WOULD BE AN UNSEEN THIRD PLAYER IN THE MATCH. STAKES IN THESE GAMES WERE HIGH, AND PLAYERS COULD STAND TO LOSE PRIZED POSSESSIONS IF MACUILXOCHITL DID NOT FAVOUR THEM.

THE GAME HAS SURVIVED TO THIS DAY AS CHILDHOOD CLASSIC **SNAKES AND LADDERS**.

THIS SPIRITUAL SIDE TO GAMING MAY HAVE ALWAYS BEEN THERE.

HISTORIAN **IRVING FINKEL** BELIEVES THAT THE EARLIEST GAME PIECES STEMMED FROM THE RITUAL PRACTICE OF **CASTING LOTS**.

IN TIME, THESE LOTS EVOLVED INTO THE DICE WE KNOW TODAY.

IN CEREMONIES, PEOPLE WOULD THROW INSCRIBED STONES, ANTLERS OR BONES, READING THE RESULT AS FORTUNE TOLD.

THE SPIRITUAL ELEMENT RETREATED, THOUGH A TRACE STILL REMAINS WHEN WE BLOW ON DICE FOR LUCK AND PRAY FOR A GOOD RESULT.

ACCORDING TO **IRVING FINKEL**, 'GAMES SPREAD FROM CULTURE TO CULTURE IN A WAY THAT HAS HARDLY ANY PARALLEL.'

AND WHILE THE ANCIENT ROMANS LOVED THE GRANDEUR OF COLOSSEUM GAMES, THEY WOULD JUST AS HAPPILY PLAY **MANCALA** AND **TIC-TAC-TOE** ON BOARDS ETCHED INTO THE COBBLED STREETS OF THE CITY.

WHILE THE ANCIENT SUMERIANS MIGHT HAVE CARVED THE MOST BEAUTIFUL AND ORNATE GAME BOARDS FOR THEIR KINGS, IT WOULD TAKE JUST A FEW SCAVENGED STONES FOR A PALACE GUARD TO PLAY THE SAME GAME, CENTURIES LATER, ON A BOARD SCRATCHED ONTO A STATUE IN ANCIENT ASSYRIA.
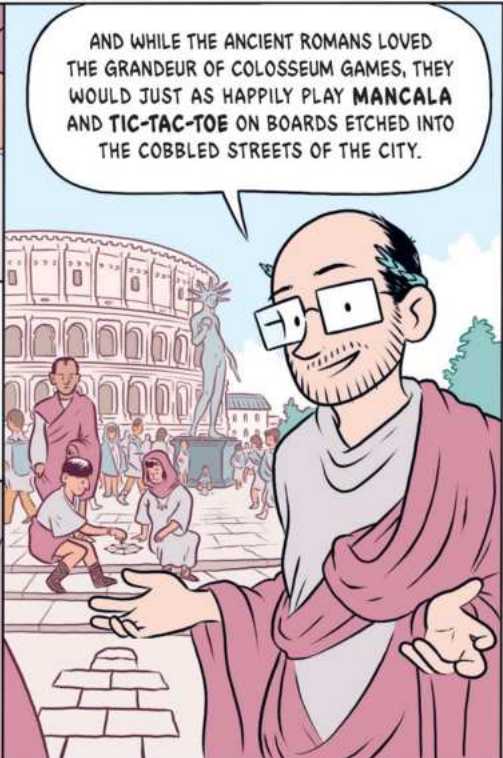
GAMES ARE A VIRTUALLY UNSTOPPABLE FORCE, CAPABLE OF TRANSCENDING CLASS, LANGUAGE AND CULTURE. WARS HAVE RAGED, CIVILIZATIONS HAVE COLLAPSED, BUT STILL PLAY HAS SPREAD.

WITH RULES RETAINED IN MEMORY, BOARDS SCRATCHED IN DUST

FROM CONTINENT TO CONTINENT. GENERATION TO GENERATION.

AND PIECES SCAVENGED FROM WHEREVER THE TRAVELLER FINDS THEMSELVES NEXT.
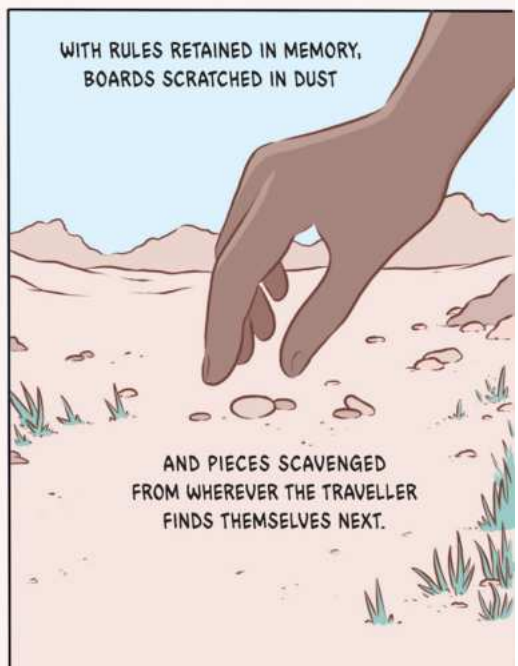
THERE IS ONE GAME THAT HAS SPREAD MORE SUCCESSFULLY THAN ALL OTHERS.

ACROSS ASIA AND THE INDIAN SUBCONTINENT, ARCHAEOLOGISTS HAVE FOUND TRACES OF A GAME THAT DATES BACK MORE THAN 1,400 YEARS.

IN CHINA IT WAS CALLED **XIANGQI**

IN JAPAN **SHOGI**

IN PERSIA **CHATRANG**.
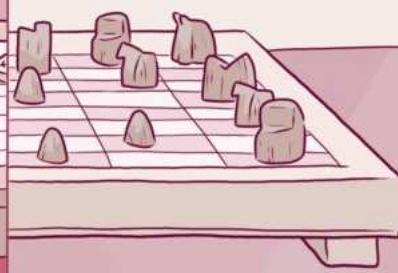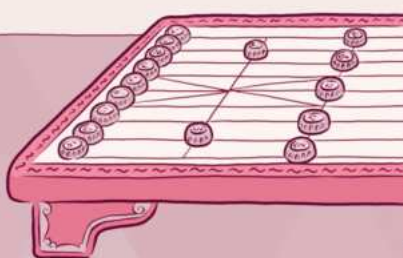
EACH GAME WAS SLIGHTLY DIFFERENT, BUT ALL SHARED THE SAME GENETIC MAKEUP.

A WEAK AND CRUCIAL KING, DEFENDED BY PIECES EACH WITH THEIR OWN SPECIAL ABILITIES.

ITS TRUE ORIGINS REMAIN CLOUDED BY HISTORY, BUT THE VERY EARLIEST CLUES POINT TO THIS GAME ORIGINATING IN INDIA DURING THE 6TH CENTURY CE.

PROBABLY A HYBRID OF OTHER POPULAR GAMES OF THE TIME, THE GAME WAS THEN KNOWN AS **CHATURANGA**, AND IT QUICKLY SPREAD.

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ACROSS THE SILK ROADS CONNECTING CHINA, INDIA AND THE MIDDLE EAST, THE GAME CAUGHT THE IMAGINATIONS OF ALL WHO PLAYED IT.

ON THIS DANGEROUS ROUTE, IT GAVE PLAYERS SEPARATED BY LANGUAGE, CULTURE AND RELIGION A CHANCE TO COMMUNICATE, FORGE FRIENDSHIPS AND PERHAPS BLOODLESSLY RESOLVE DISPUTES IN THE PROCESS.

OVER CENTURIES, AND THROUGH WARS, EXPANSION AND TRADE, IT CROSSED INTO AFRICA AND THEN EUROPE.

CHATURANGA BECAME CHATRANG,

WHICH BECAME SHATRANG
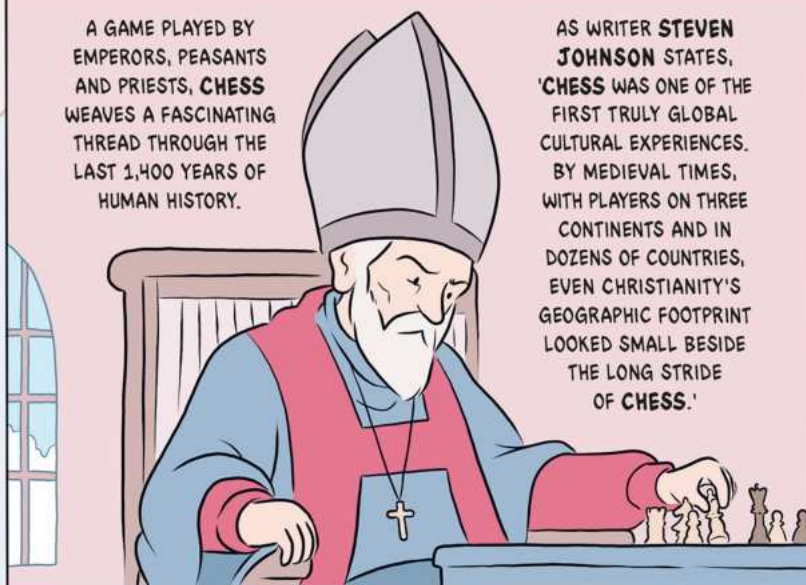
AND SANTRANCH

AND SCHACH

ALONG THE WAY, RULES WERE ADDED, FIXED AND REFINED BY PLAYERS ACROSS EURASIA.

AND THEN, SOMETIME AROUND 1470 CE IT REACHED THE SHORES OF BRITAIN.

AFTER ALMOST A THOUSAND YEARS OF PLAY, **CHESS** WAS CLOSE TO ITS FINAL FORM.

A GAME PLAYED BY EMPERORS, PEASANTS AND PRIESTS, **CHESS** WEAVES A FASCINATING THREAD THROUGH THE LAST 1,400 YEARS OF HUMAN HISTORY.

AS WRITER **STEVEN JOHNSON** STATES, 'CHESS WAS ONE OF THE FIRST TRULY GLOBAL CULTURAL EXPERIENCES. BY MEDIEVAL TIMES, WITH PLAYERS ON THREE CONTINENTS AND IN DOZENS OF COUNTRIES, EVEN CHRISTIANITY'S GEOGRAPHIC FOOTPRINT LOOKED SMALL BESIDE THE LONG STRIDE OF **CHESS**.'

THE GAME HAS TAKEN COUNTLESS FORMS.

THE BEAUTIFUL **ABSTRACT SHAPES** CARVED BY EARLY MUSLIM CRAFTSMEN TO CONFORM THE GAME TO ISLAMIC LAW.
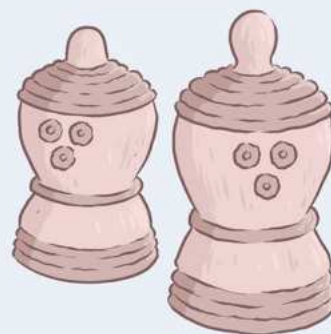
THE WALRUS-BONE UIG CHESSMEN, HIDDEN ON THE ISLE OF LEWIS IN SCOTLAND BY 12TH-CENTURY NORWEGIAN SAILORS AND REDISCOVERED IN 1831.

IT FACED WARS, PLAGUES, FAMINES AND COUNTLESS ATTEMPTS BY POLITICAL AND RELIGIOUS LEADERS TO BAN IT, BUT THE HUMAN DESIRE TO PLAY WON OUT.

NOT ONLY DID THE GAME SURVIVE THE CENTURIES, IT **THRIVED**.

15

VIENNA, 1770.
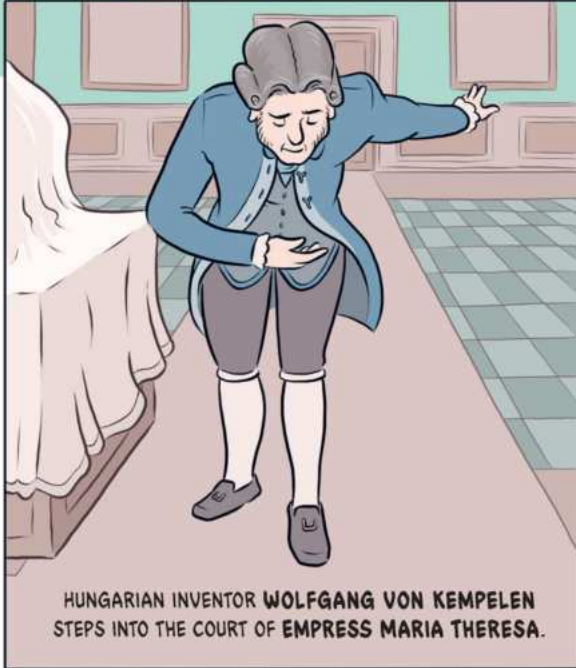
HUNGARIAN INVENTOR **WOLFGANG VON KEMPELEN** STEPS INTO THE COURT OF **EMPRESS MARIA THERESA**.

PULLING AWAY A SHEET HE UNVEILS HIS INVENTION.

THE MECHANICAL TURK.

WINDING IT UP, THE MACHINE SPRINGS INTO MOTION WITH THE TICKING OF GEARS.

PLAYING A FLAWLESS GAME OF **CHESS** WITH ITS OPPONENT, THE TURK RESPONDS TO THEIR MOVES WITH INTELLIGENCE AND SKILL.

IT WAS UNLIKE ANYTHING THAT HAD BEEN SEEN BEFORE.

I BELIEVE THAT IS CHECKMATE.

16

OVER THE NEXT 80 YEARS THE TURK TOURED THE WORLD, PLAYING AGAINST **NAPOLEON BONAPARTE**, **BENJAMIN FRANKLIN** AND **CHARLES BABBAGE** ALONG THE WAY.

BUT NOT EVERYONE WAS CONVINCED. FOR ENGINEER **ROBERT WILLIS**, THE TURK WAS AN IMPOSSIBILITY.

THE PHENOMENA OF THE **CHESS** PLAYER ARE INCONSISTENT WITH THE EFFECTS OF MERE MECHANISM...

THIS IS THE PROVINCE OF INTELLECT ALONE.

FAR TOO SOPHISTICATED FOR THE TIME, THE MACHINE WAS INDEED A HOAX. WITHIN THE CABINET WOULD SIT A **CHESS** MASTER, OPERATING THE TURK VIA A SERIES OF MAGNETS, LEVERS AND PULLEYS.

ON THAT WILLIS WAS RIGHT.

BUT WAS **CHESS** 'THE PROVINCE OF INTELLECT ALONE'?

COULD A MACHINE BE MADE TO PLAY A GAME?

OVER THE COMING DECADES THIS IDEA WOULD BE PUT TO THE TEST.

INVENTOR **CHARLES BABBAGE** SPENT MUCH OF HIS LIFE DEVELOPING FANTASTICALLY INTRICATE MACHINES CAPABLE OF MAKING COMPLEX CALCULATIONS.

WORKING WITH MATHEMATICIAN **ADA LOVELACE**, BABBAGE CONCEIVED OF THE **ANALYTICAL ENGINE** — A MECHANICAL COMPUTER THAT WOULD BE CAPABLE OF PERFORMING A VARIETY OF DIFFERENT PROGRAMS.

HAVING PLAYED AGAINST THE TURK IN 1820, BABBAGE LONGED TO CREATE 'A MACHINE THAT SHOULD BE ABLE TO PLAY A GAME OF PURELY INTELLECTUAL SKILL SUCCESSFULLY; SUCH AS TIT-TAT-TO, **DRAFTS**, **CHESS**, ETC.'

ALMOST A CENTURY AHEAD OF ITS TIME, BABBAGE'S CONCEPT FOR THE ANALYTICAL ENGINE NEVER CAME TO FRUITION.

BUT HIS IDEAS SURVIVED.
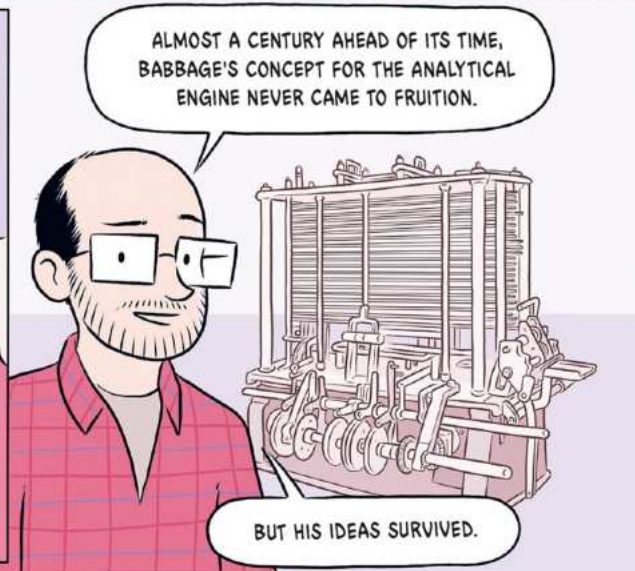
IN 1914, SPANISH ENGINEER **LEONARDO TORRES QUEVEDO** UNVEILED **EL AJEDRECISTA** AT THE PARIS FAIR. POWERED BY SOME OF BABBAGE'S PRINCIPLES, THE MACHINE COULD PLAY A SIMPLE **CHESS** ENDGAME AGAINST A HUMAN PLAYER, USING A GRAMOPHONE TO ANNOUNCE CHECK AND CHECKMATE.

JAQUE AL REY

1939.

HITLER'S NAZI
REICH IS STORMING
ACROSS EUROPE

UNDER THE LOOMING
THREAT OF AN ATROCITY
YET TO COME, THE **POLISH
CIPHER BUREAU** DELIVERS
A GIFT TO THEIR ALLIES IN
FRANCE AND BRITAIN...

A COPY OF THE
GERMAN **ENIGMA
MACHINE.**

19

BLETCHLEY PARK, ENGLAND.

A PROMISING YOUNG MATHEMATICIAN TASKED WITH CRACKING THE GERMANS' CODES, **ALAN TURING** COULD SEE THE ENIGMA MACHINE WAS A BRILLIANT DEVICE.

A PORTABLE BOX ABOUT AS BIG AS A TYPEWRITER, THE MACHINE ALLOWED ITS USER TO TYPE OUT A MESSAGE AND SEE IT TRANSLATED INTO CODE IN REAL TIME.
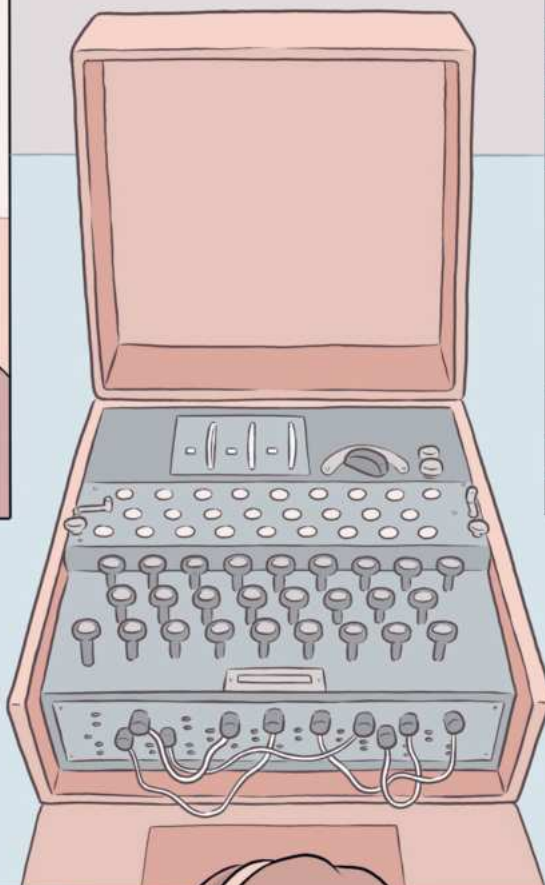
UNDER THE LID A SERIES OF ELECTROMAGNETIC COGS AND ROTORS WOULD CLICK INTO ACTION, CONVERTING EACH LETTER INTO A DIFFERENT ONE.
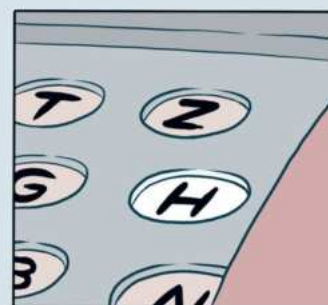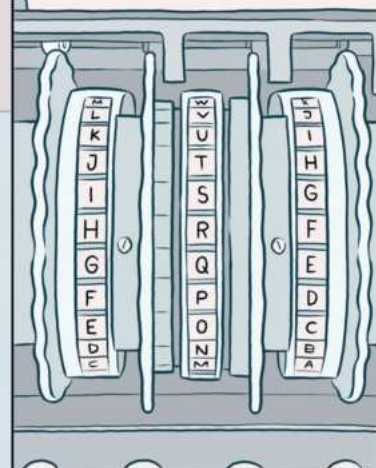
ON THE OPEN AIRWAVES THESE MESSAGES WERE RIPE FOR INTERCEPT. BUT TO ANYONE WITHOUT THE ENIGMA AND ITS CURRENT CIPHER KEY, THEY WERE MEANINGLESS.

WITH A NEW KEY CHOSEN EVERY DAY FROM 159 QUINTILLION DIFFERENT OPTIONS, THE GERMANS WERE CERTAIN THEY HAD PRODUCED AN UNBREAKABLE SYSTEM.

20
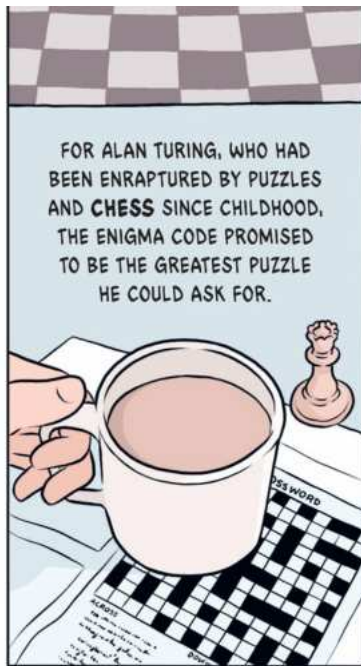
FOR ALAN TURING, WHO HAD BEEN ENRAPTURED BY PUZZLES AND **CHESS** SINCE CHILDHOOD, THE ENIGMA CODE PROMISED TO BE THE GREATEST PUZZLE HE COULD ASK FOR.

THE NAZIS' CODE WAS FAR TOO COMPLEX TO CALCULATE WITH HUMAN BRAINPOWER ALONE, AND SO TURING AND THE TEAM AT BLETCHLEY PARK TURNED TO THE RUDIMENTARY COMPUTER TECHNOLOGY OF THE ERA TO HELP.
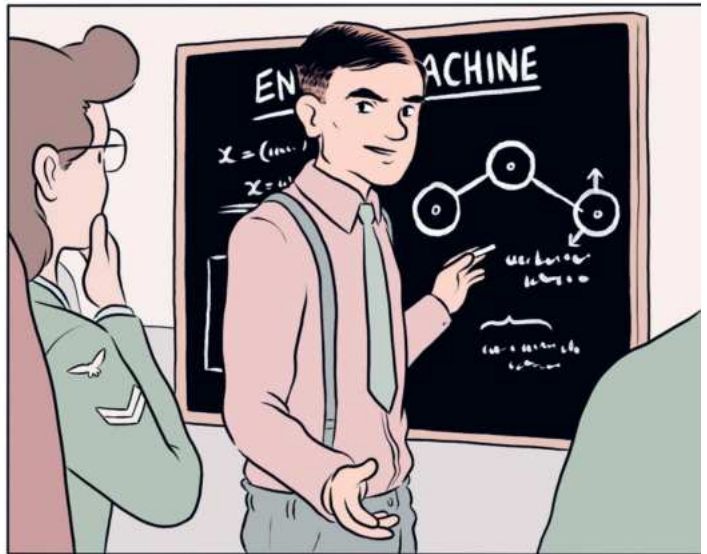
WORKING DAY AND NIGHT, THE TEAM CONSTRUCTED THEIR **BOMBE** — A COMPUTER WHOSE SOLE PURPOSE WAS TO ROOT OUT THE CURRENT CIPHER KEY.

THE MACHINE WAS MASSIVE, WEIGHING IN AT AROUND A TON. BUT IT WORKED. WHAT WOULD HAVE TAKEN TEAMS OF HUMAN CRYPTOGRAPHERS MONTHS TO COMPUTE, THE BOMBE COULD HELP DECIPHER IN ABOUT A DAY.

THE GAME WAS UP. THE WORLD'S TOUGHEST PUZZLE HAD BEEN CRACKED.

SOON MULTIPLE BOMBES WERE IN ACTION, OPERATED BY TEAMS OF FEMALE CODEBREAKERS WHO WORKED DAY AND NIGHT TO KEEP THEM RUNNING.

PRAYING THEIR WORK COULD TURN THE TIDE OF WAR.

AFTER THE WAR, TURING WAS DRAWN TO A NEW PUZZLE.

WHAT ELSE MIGHT COMPUTERS BE CAPABLE OF?

COULD ONE MAKE A MACHINE WHICH WOULD ANSWER QUESTIONS PUT TO IT, IN SUCH A WAY THAT IT WOULD NOT BE POSSIBLE TO DISTINGUISH ITS ANSWERS FROM THOSE OF A MAN?

COULD ONE MAKE A MACHINE WHICH WOULD HAVE FEELINGS AS YOU AND I HAVE?

TURING BEGAN TO ENVISION A FUTURE OF MACHINE INTELLIGENCE FAR BEYOND WHAT THESE ROOM-SIZED BEHEMOTHS WERE CURRENTLY CAPABLE OF. BUT IN TRAINING A COMPUTER TO THINK, WHERE TO BEGIN?

DESPITE THE EVER INCREASING SIZE AND POWER OF COMPUTERS AT THE TIME, TURING KNEW THAT PROGRAMMING A COMPUTER TO CALCULATE EVERY POSSIBLE MOVE IN **CHESS** WAS SIMPLY IMPOSSIBLE.

LOOKING EVEN THREE MOVES AHEAD WOULD LEAD TO NEARLY 2 BILLION POSSIBILITIES. AFTER FOUR MOVES, IT WOULD BE OVER 2 TRILLION.

IN THE ANCIENT GAME OF **CHESS**, TURING BELIEVED HE HAD FOUND HIS ANSWER.

SIMPLY PUT, THERE ARE MORE POSSIBLE MOVES IN **CHESS** THAN THERE ARE ATOMS IN THE KNOWN UNIVERSE.

IT WAS THE PERFECT PROBLEM. INSTEAD OF BULLDOZING ITS OPPONENT WITH SHEER CALCULATION, A **CHESS** PROGRAM WOULD NEED TO THINK TACTICALLY ABOUT THE GAME.

TO ASSESS THE BOARD WITH INTELLIGENCE.

WITH HIS WARTIME COLLEAGUE **DAVID CHAMPERNOWNE**, HE GOT TO WORK.

BY 1952 THEIR PROGRAM, NAMED **TUROCHAMP**, WAS COMPLETE.

TOO COMPLEX TO RUN ON CONTEMPORARY COMPUTERS, TURING TESTED IT BY RUNNING THE PROGRAM HIMSELF, DOING THE CALCULATIONS BY HAND.

IT WAS A PARTIAL SUCCESS, ABOUT AS GOOD AS A BEGINNER. BUT HISTORY HAD STILL BEEN MADE.

CHECKMATE.

OVER THE COMING YEARS, PROGRAMMERS AND ENGINEERS WOULD USE GAMES TO TEST THE LIMITS OF THEIR MACHINES AND DEVELOP THEIR INTELLIGENCE.
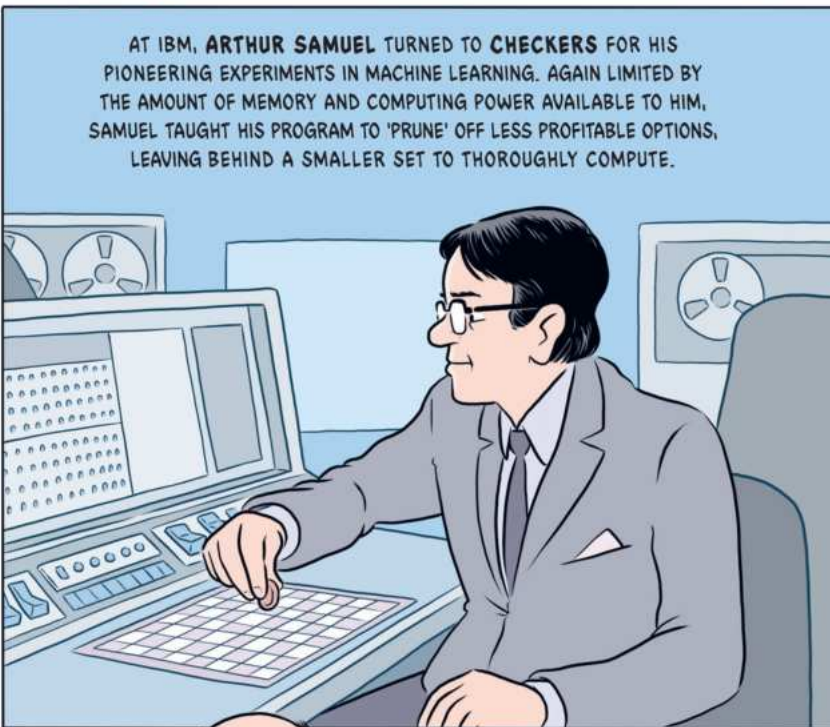
AT IBM, **ARTHUR SAMUEL** TURNED TO **CHECKERS** FOR HIS PIONEERING EXPERIMENTS IN MACHINE LEARNING. AGAIN LIMITED BY THE AMOUNT OF MEMORY AND COMPUTING POWER AVAILABLE TO HIM, SAMUEL TAUGHT HIS PROGRAM TO 'PRUNE' OFF LESS PROFITABLE OPTIONS, LEAVING BEHIND A SMALLER SET TO THOROUGHLY COMPUTE.

BY 1955, SAMUEL'S PROGRAM WAS CAPABLE OF MEMORIZING GAMES AND LEARNING FROM ITS MISTAKES, ABLE TO PLAY AGAINST ITSELF TO LEARN FASTER THAN A HUMAN PLAYER EVER COULD.

THINKING, LEARNING MACHINES.

IT WOULD ONLY BE A MATTER OF TIME BEFORE THEY COULD OUTSMART AND DEFEAT A SKILLED HUMAN PLAYER.

BY THE 1950s, COMPUTERS HAD BEGUN TO ENTER THE PUBLIC CONSCIOUSNESS. AND WHAT BETTER WAY TO SHOW OFF THEIR POTENTIAL THAN WITH A GAME?

AT THE CANADIAN NATIONAL EXHIBIT IN 1950, THE CURTAIN WAS RAISED ON **BERTIE THE BRAIN**, A COMPUTER DESIGNED TO PLAY TIC-TAC-TOE WITH THE PUBLIC.

THE ELECTRONIC WONDER by Rogers Majestic

CHOOSE Rogers Majestic for LASTING
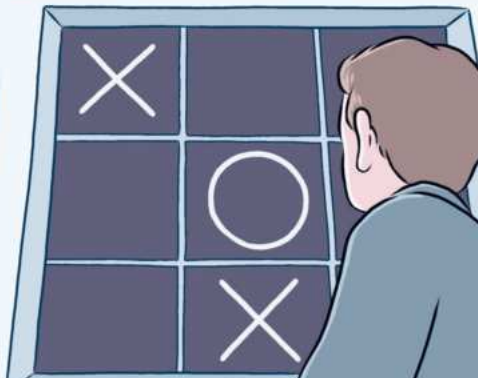
THE 1951 FESTIVAL OF BRITAIN FEATURED **NIMROD**, A MONSTROUS COMPUTER CAPABLE OF PLAYING THE ANCIENT GAME OF **NIM**.

ELEKTRONEN **F** GEHIRN

AND IN 1958 **WILLIAM HIGINBOTHAM'S TENNIS FOR TWO** DELIGHTED THE CROWDS AT HIS LAB'S OPEN DAY, ITS FAST-PACED PLAY DISPLAYED ON A SIMPLE OSCILLOSCOPE.
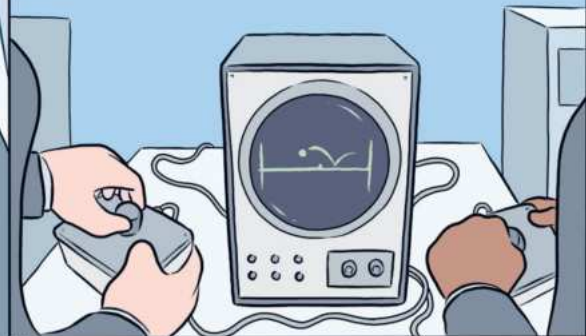
THESE PRIMITIVE VIDEO GAMES WOULD PROVE IRRESISTIBLE TO THOSE LUCKY ENOUGH TO ENCOUNTER THEM. AS TURING HIMSELF NOTED, ON NIMROD'S APPEARANCE IN GERMANY.

ELEKTRONEN **F** GEHIRN
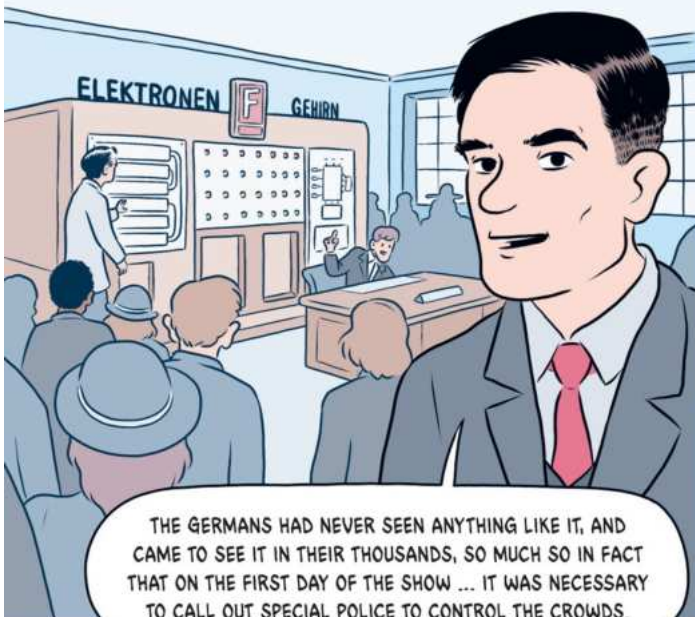
THE GERMANS HAD NEVER SEEN ANYTHING LIKE IT, AND CAME TO SEE IT IN THEIR THOUSANDS, SO MUCH SO IN FACT THAT ON THE FIRST DAY OF THE SHOW ... IT WAS NECESSARY TO CALL OUT SPECIAL POLICE TO CONTROL THE CROWDS.

TO THE DISMAY OF THE SCIENTISTS PRESENTING THESE COMPUTERS, AUDIENCES WERE FAR MORE INTERESTED IN THE FUN OF IT THAN WHAT WAS GOING ON UNDER THE HOOD.

AND BECAUSE THE LABS THAT CREATED THEM WERE UNABLE TO APPRECIATE THEIR HISTORICAL SIGNIFICANCE, ONE BY ONE THESE GAMES WERE DISMANTLED, THEIR PARTS PUT TO WORK ON FAR MORE WORTHY PROJECTS.
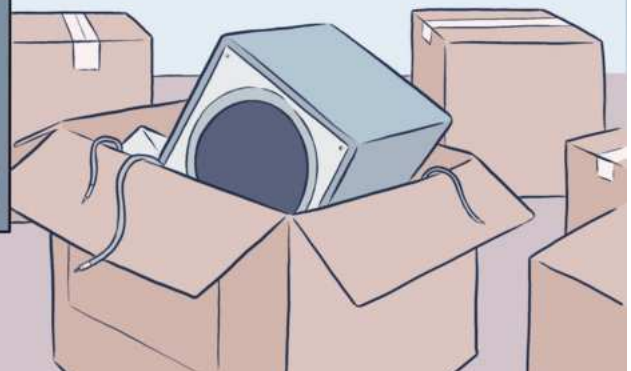
1961. MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

THE **PDP-1** ARRIVES FROM **DIGITAL EQUIPMENT CORPORATION**.

$120,000 OF CUTTING-EDGE TECHNOLOGY PACKED INTO A UNIT THE SIZE OF A LARGE CAR.

FOR THE PROFESSORS OF MIT, THIS MACHINE IS THE PERFECT INSTRUMENT FOR MATHEMATICAL FORMULAS AND SCIENTIFIC ENQUIRIES.

SERIOUS WORK FOR A SERIOUS MACHINE.

BUT FOR THE RAG-TAG GROUP OF YOUNG STUDENTS IN THE **TECH MODEL RAILROAD CLUB**, THIS MACHINE REPRESENTS SOMETHING VERY DIFFERENT.

THEY AREN'T THE BUTTONED-DOWN ACADEMICS THAT THEIR PROFESSORS ARE. THEY'RE HACKERS.

AND THE PDP-1 WAS BUILT FOR THEM.

WITH THE NEW COMPUTER INSTALLED, THE FIRST THING THEY DO IS RIP OUT ITS INSIDES TO SEE HOW IT WORKS, TWEAKING HARDWARE AND WRITING SOFTWARE TO BEND THE MACHINE TO THEIR WILL.
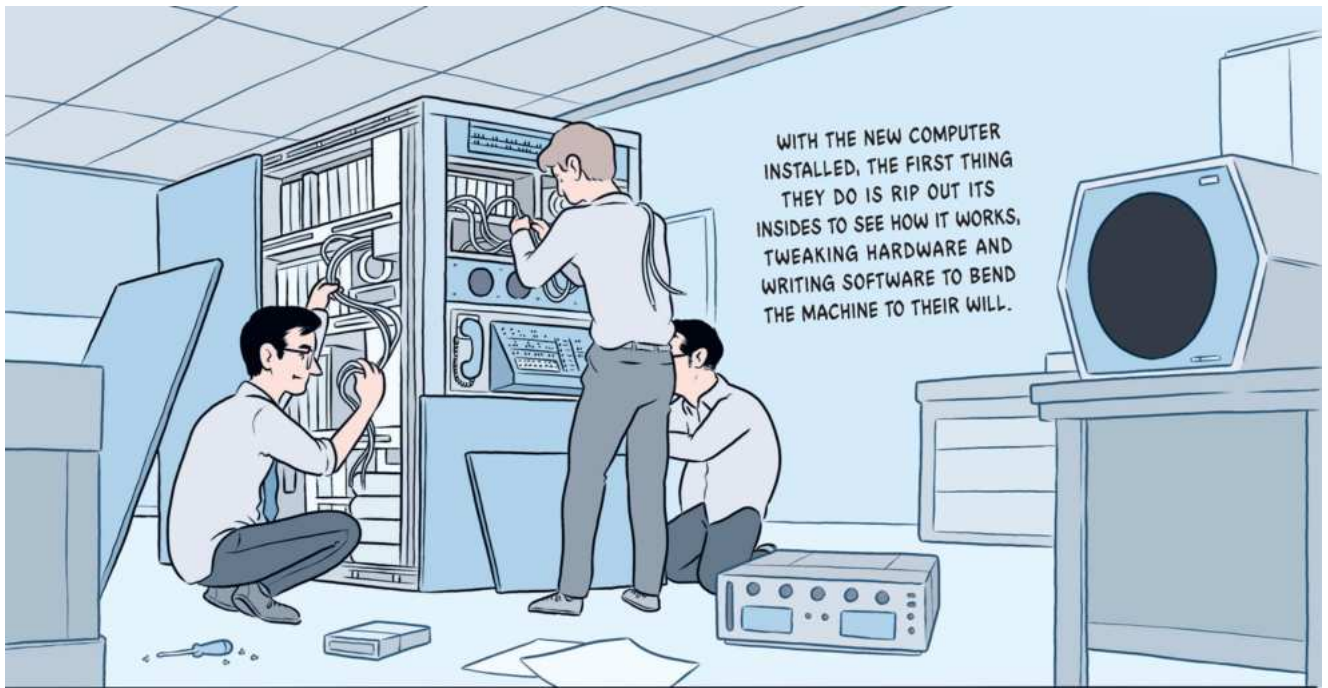
BEFORE LONG, THE PDP-1 IS PLAYING **CHESS** AND SYNTHESIZED BACH FUGUES; BEING USED TO MAP THE NIGHT SKY AND CREATE MAYAN CALENDARS.

LIKE OUR NEOLITHIC ANCESTORS, THESE STUDENTS ARE DRIVEN BY A DESIRE TO PLAY. THEY PLAY TO DISCOVER, BENDING THE RULES TO REVEAL NEW POSSIBILITIES.

BECAUSE A COMPUTER SHOULDN'T JUST CRUNCH NUMBERS.

IT SHOULD DANCE AND SING AND PLAY.

THE PDP-1 BECKONS COLLEGE DROP-OUT **STEVE RUSSELL**. IT'S THE HEIGHT OF THE SPACE RACE, AND FOR A YOUNG MAN WORKING IN ARTIFICIAL INTELLIGENCE AND OBSESSED WITH SCI-FI NOVELS AND BAD MOVIES, THE FUTURE SEEMS CLOSER THAN EVER.

HE WANTS THE GLORY OF THE GREATEST HACK. HE'S SEEN **CHESS**, HE'S SEEN **CHECKERS**.

E.E. Smith

First ENSMA

BUT WHAT ABOUT A GAME OF SPEED AND SKILL, A ROARING SPACE EPIC ON THIS SCI-FI SCREEN?
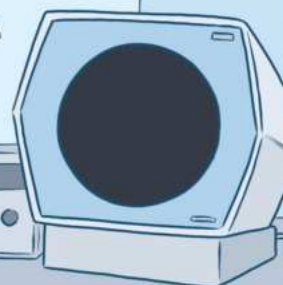
SPACEWAR. THE IDEA STICKS, AND AFTER MONTHS OF GENTLE PRODDING BY HIS COLLEAGUES, RUSSELL SITS DOWN TO MAKE HIS VISION A REALITY.
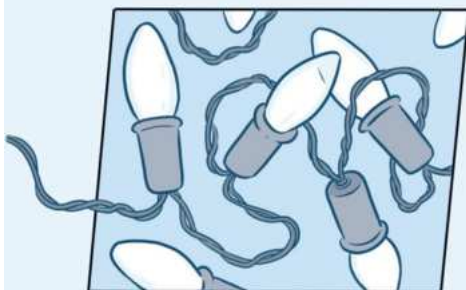
DAYS OF CODING TURN INTO MONTHS. CHRISTMAS COMES AND GOES. A NEW YEAR DAWNS. AND STILL RUSSELL CODES.

HIS GAME PUNCHED BIT BY BIT INTO THE PDP-1'S TICKER-TAPE MEMORY.
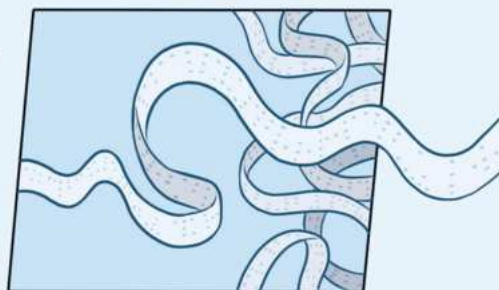
BY FEBRUARY 1962 IT'S PLAYABLE. RUSSELL'S FRIENDS GATHER ROUND THE SCREEN.

GENTLEMEN. LET ME PRESENT TO YOU... **SPACEWAR!**

THE GAME BEGINS.
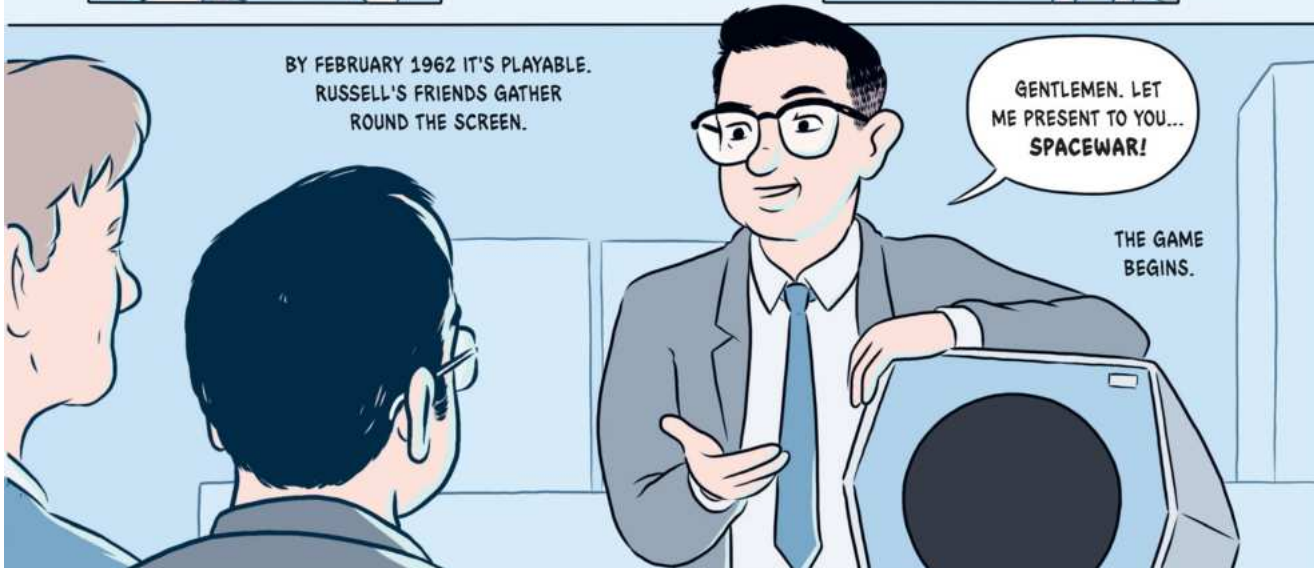
OH MY *GOD*

AN ART FORM HAS BEEN BORN.

SOON A RAG-TAG DEVELOPMENT TEAM FORMS AROUND THE GAME.

THE FIRST OF ITS KIND.
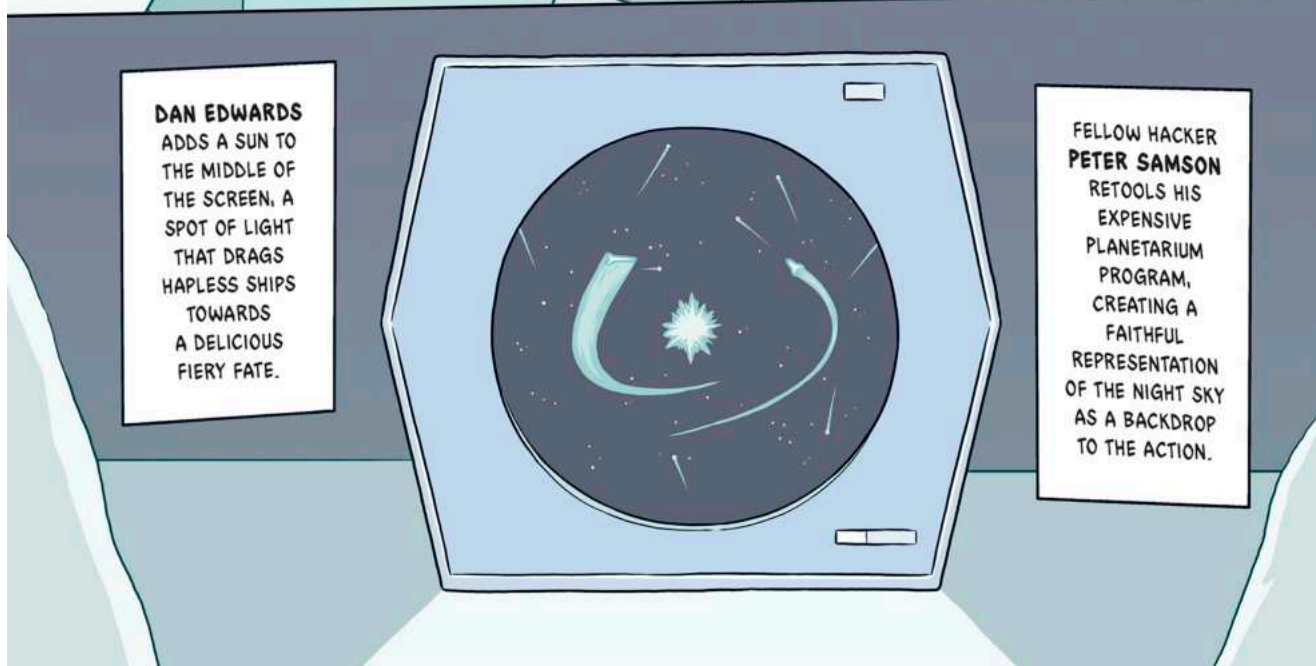
DAN EDWARDS ADDS A SUN TO THE MIDDLE OF THE SCREEN, A SPOT OF LIGHT THAT DRAGS HAPLESS SHIPS TOWARDS A DELICIOUS FIERY FATE.

FELLOW HACKER **PETER SAMSON** RETOOLS HIS EXPENSIVE PLANETARIUM PROGRAM, CREATING A FAITHFUL REPRESENTATION OF THE NIGHT SKY AS A BACKDROP TO THE ACTION.

WITH LONG HOURS OF GAMING TAKING THEIR TOLL, **ALAN KOTOK** AND **BOB SAUNDERS** RAID THE TECH MODEL RAILROAD CLUB ROOMS TO SCAVENGE PARTS, KLUDGING TOGETHER TWO CONTROLLERS OUT OF WOOD, WIRE AND MASONITE BEFORE JUMPING BACK INTO THE GAME.

AS WORD SPREADS BEYOND CAMPUS, COPIES PASS TO OTHER PDP-1 USERS TO PLAY WITH.

IT BECOMES AN OBSESSION.

A LATE NIGHT ROUTINE SO ALL-CONSUMING THAT AT IBM THE GAME IS BANNED.

JOURNALIST **STEWART BRAND** IS WITNESSING A REVOLUTION.

THEY WERE **OUT OF THEIR BODIES** IN THIS GAME THAT THEY'D CREATED OUT OF NOTHING. IT WAS THE ONLY WAY TO DESCRIBE IT.

THEY WERE HAVING AN OUT-OF-BODY EXPERIENCE AND UP UNTIL THAT TIME THE ONLY OUT-OF-BODY EXPERIENCES I'D SEEN WERE DRUGS.

LIKE **CHESS** MORE THAN A THOUSAND YEARS EARLIER, THE GAME SPREADS LIKE A VIRUS.

A THOUSAND TIMES FASTER.

A GAME BURNING LIKE A SUN.

BY THE 1970s **SPACEWAR!**'S FIRE WAS STILL BURNING. IN **ROLLING STONE**, **STEWART BRAND** DECLARED HE'D SEEN 'AN ART FORM WAITING FOR ARTISTS, A CONSCIOUSNESS FORM WAITING FOR MYSTICS'.

AT STANFORD, ELECTRICAL ENGINEERING STUDENT **BILL PITTS** INTRODUCED THE GAME TO HIS FRIEND **HUGH TUCK**.

MAN, IF SOMEONE COULD FIND A WAY TO GET THIS GAME INTO A BAR, THEY'D MAKE A FORTUNE...

IT WAS A BRILLIANT IDEA. WITH THE RELEASE OF THE MUCH MORE AFFORDABLE PDP-11 IN 1969, THEY GOT TO WORK ASSEMBLING A PROTOTYPE COIN-OPERATED **SPACEWAR!** CABINET, RENAMING IT **GALAXY GAME** IN THE PROCESS.

HOWEVER, THEY WEREN'T THE ONLY ONES WITH BIG IDEAS. IN CALIFORNIA, **NOLAN BUSHNELL** AND **TED DABNEY** WERE ALREADY WORKING ON THEIR OWN **SPACEWAR!** CLONE.

REALIZING THAT USING THE EXISTING COMPUTERS OF THE TIME WOULD BE TOO EXPENSIVE, THEY HIT UPON THE IDEA OF CREATING **DEDICATED CIRCUITS** TO RUN THE GAME ON.
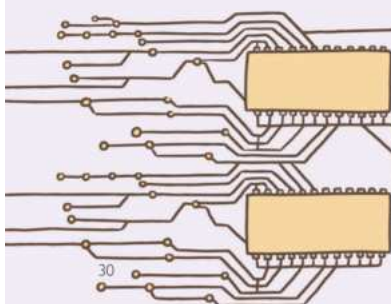
HOUSED IN A SLEEK, FUTURISTIC CABINET, **COMPUTER SPACE**'S CHEAP CIRCUITRY MEANT IT COULD BE SOLD AT A FRACTION OF THE COST OF PITTS AND TUCK'S GAME.
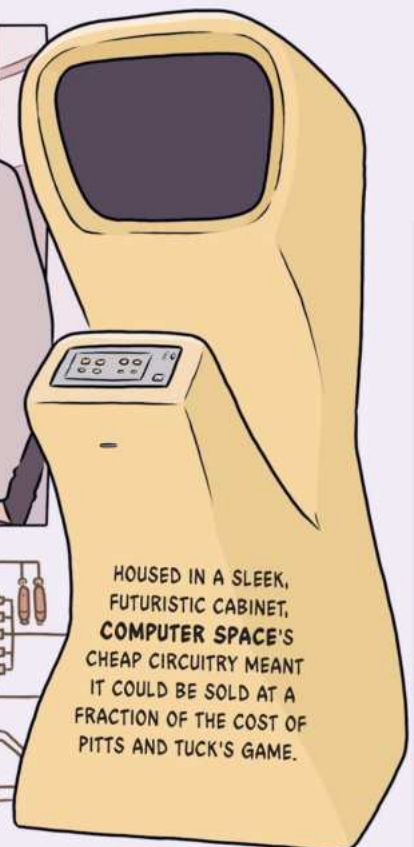
IN LATE 1971, WITHIN MONTHS OF EACH OTHER, **GALAXY GAME** AND **COMPUTER SPACE** WERE RELEASED TO THE PUBLIC. AT STANFORD'S STUDENT UNION, **GALAXY GAME**'S SINGLE PROTOTYPE UNIT DREW FASCINATED CROWDS.

AT THAT TIME, A GAME LIKE THAT WAS JUST MAGICAL, TO SEE THESE LITTLE THINGS THAT YOU COULD STEER AND FIRE TORPEDOES.

BUT AT 10¢ A GAME, IT WAS GOING TO TAKE A LONG TIME FOR THE PAIR TO MAKE BACK THEIR $20,000 INVESTMENT.
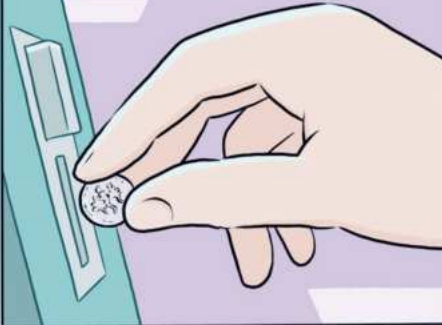
BUSHNELL AND DABNEY'S GAME WAS SOMEWHAT MORE SUCCESSFUL. THOUGH COMPLEX TO CONTROL, THE GAME WAS A HIT WITH KIDS AND STUDENTS.

A MINOR COMMERCIAL SUCCESS.

BUT THESE TWO COMPETING TEAMS WEREN'T ALONE IN THEIR AMBITION. SINCE AS FAR BACK AS THE EARLY 1950s INVENTOR AND ENGINEER **RALPH BAER** HAD BEEN WORKING TO FIND A WAY TO LET PEOPLE PLAY GAMES ON THEIR TV.

WORKING WITH TV COMPANY MAGNAVOX, BAER CREATED THE **ODYSSEY**, A REVOLUTIONARY HOME CONSOLE CAPABLE OF PLAYING 12 IN-BUILT GAMES, INCLUDING **PING-PONG** AND **SHOOTING GALLERY**.
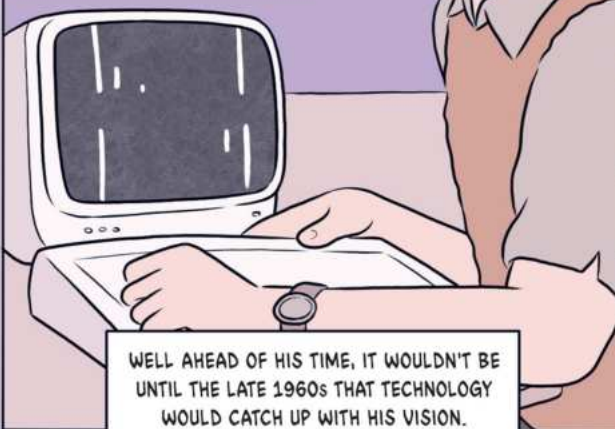
WELL AHEAD OF HIS TIME, IT WOULDN'T BE UNTIL THE LATE 1960s THAT TECHNOLOGY WOULD CATCH UP WITH HIS VISION.
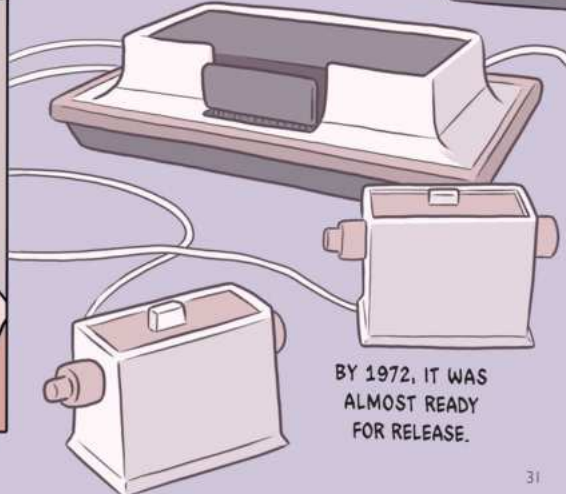
BY 1972, IT WAS ALMOST READY FOR RELEASE.

SPURRED ON BY THEIR INITIAL SUCCESS, BUSHNELL AND DABNEY DECIDED TO TAKE THE NEXT STEP, FORMING THE FIRST DEDICATED VIDEO GAME COMPANY IN JUNE 1972.

HAVING SEEN A DEMONSTRATION OF THE MAGNAVOX ODYSSEY, BUSHNELL SET THEIR FIRST EMPLOYEE **AL ALCORN** THE TASK OF RECREATING BAER'S **PING-PONG** GAME FOR THE ARCADE MARKET.
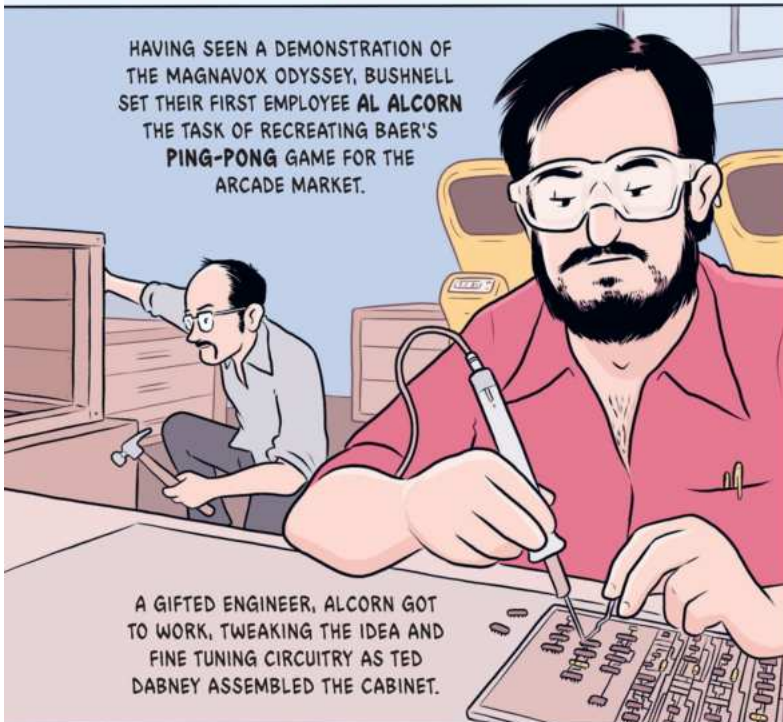
A GIFTED ENGINEER, ALCORN GOT TO WORK, TWEAKING THE IDEA AND FINE TUNING CIRCUITRY AS TED DABNEY ASSEMBLED THE CABINET.

THE PROTOTYPE READY, THEY DROPPED **PONG** OFF AT A LOCAL BAR AND WAITED.

A CALL CAME IN A FEW WEEKS LATER.

THEIR MACHINE WAS BROKEN.
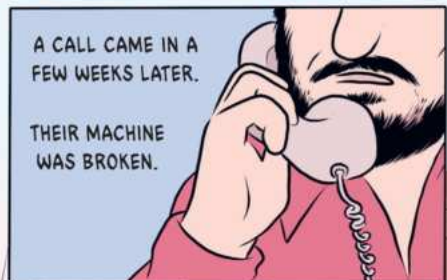
ARRIVING AT ANDY CAPP'S TAVERN, ALCORN PRIED OPEN THE JAMMED COIN BOX.

THE GAME WAS A **HIT**.

32
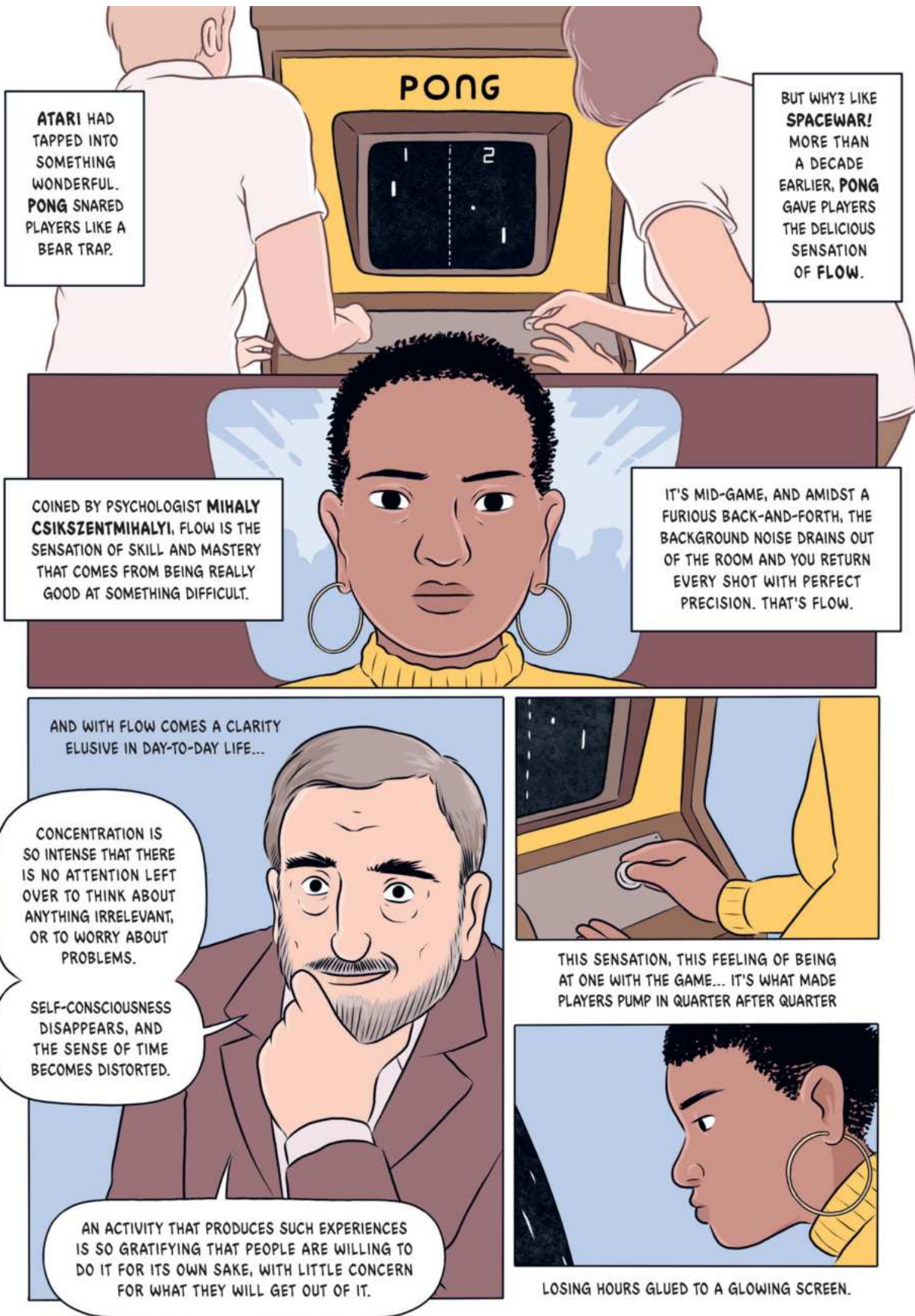
ATARI HAD TAPPED INTO SOMETHING WONDERFUL. **PONG** SNARED PLAYERS LIKE A BEAR TRAP.

BUT WHY? LIKE **SPACEWAR!** MORE THAN A DECADE EARLIER, **PONG** GAVE PLAYERS THE DELICIOUS SENSATION OF **FLOW.**

COINED BY PSYCHOLOGIST **MIHALY CSIKSZENTMIHALYI**, FLOW IS THE SENSATION OF SKILL AND MASTERY THAT COMES FROM BEING REALLY GOOD AT SOMETHING DIFFICULT.

IT'S MID-GAME, AND AMIDST A FURIOUS BACK-AND-FORTH, THE BACKGROUND NOISE DRAINS OUT OF THE ROOM AND YOU RETURN EVERY SHOT WITH PERFECT PRECISION. THAT'S FLOW.

AND WITH FLOW COMES A CLARITY ELUSIVE IN DAY-TO-DAY LIFE...

CONCENTRATION IS SO INTENSE THAT THERE IS NO ATTENTION LEFT OVER TO THINK ABOUT ANYTHING IRRELEVANT, OR TO WORRY ABOUT PROBLEMS.

SELF-CONSCIOUSNESS DISAPPEARS, AND THE SENSE OF TIME BECOMES DISTORTED.

AN ACTIVITY THAT PRODUCES SUCH EXPERIENCES IS SO GRATIFYING THAT PEOPLE ARE WILLING TO DO IT FOR ITS OWN SAKE, WITH LITTLE CONCERN FOR WHAT THEY WILL GET OUT OF IT.

THIS SENSATION, THIS FEELING OF BEING AT ONE WITH THE GAME... IT'S WHAT MADE PLAYERS PUMP IN QUARTER AFTER QUARTER
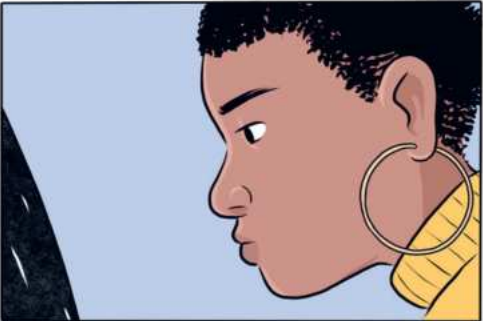
LOSING HOURS GLUED TO A GLOWING SCREEN.

BY 1973 **PONG** WAS GOING GLOBAL, TRANSCENDING ALL LANGUAGE BARRIERS. IN ATARI'S WAREHOUSE AN ALL-FEMALE TEAM WORKED TO ASSEMBLE CIRCUIT BOARDS AND CONSTRUCT CABINETS TO MEET THE DEMAND.

BY 1974 ATARI HAD SOLD 8,000 MACHINES AND ESTABLISHED THEMSELVES AS **THE** BIG NAME IN VIDEO GAMES.

SOON OTHER GAMES EMERGED, HARNESSING THIS WONDERFUL SENSATION OF FLOW TO COMPETE FOR THE WORLD'S SPARE CHANGE.

GUN FIG

DEATH RACE

SPACE WARS

STUNT CYCLE

SHARK JAWS

NIGHT DRIVER

FOR MUSICIAN AND SOCIOLOGIST **DAVID SUDNOW**, **BREAKOUT** (1976) BECAME AN OBSESSION.

THIS SLICE OF 'SUPERCEREBRAL CRYSTAL CLEAR SILICON VALLEY EYE JAZZ' TAPPED INTO SOMETHING PRIMORDIAL...

PALMS WET, PULSE RACING, MOUTH DRY, NERVE ENDINGS INTERFACED IN NANOSECONDS, THE KNOB ITSELF THROBBING, ELECTRONIC REFLECTIONS GOING STRAIGHT FOR MY SPINAL CORD ...

A GAME WAS TAKING HIM OVER, MIND AND BODY. IT WASN'T LONG BEFORE HE WAS ADDICTED, PLAYING FOR HOURS EVERY DAY. JUST ONE MORE GAME.

34

IT WASN'T JUST SUDNOW. GAMES WERE TAKING OVER EVERYWHERE.

SIMPLE. ADDICTIVE. LUMINOUS WITH COLOUR AND SPEED. IN 1979 **TOMOHIRO NISHIKADO**'S **SPACE INVADERS** SENT SHOCKWAVES THROUGH JAPANESE CULTURE.

AS GAMES HISTORIAN **TRISTAN DONOVAN** NOTES, WITHIN THREE MONTHS THE GAME 'HAD GOBBLED UP SO MANY ¥100 COINS IT BROUGHT JAPAN TO A STANDSTILL, PREVENTING PEOPLE FROM BUYING SUBWAY TICKETS OR USING PUBLIC TELEPHONE BOXES'.

ITS INVASION OF THE U.S. WAS JUST AS HUGE, CEMENTING ATARI'S **VCS** IN THE HOME CONSOLE MARKET.

TWIN GALAXIES

AND ARCADES WERE SPRINGING UP EVERYWHERE. BY 1982 THERE WERE 13,000 ARCADES IN THE U.S. ALONE, AND MANY MACHINES WERE SUCKING DOWN QUARTERS AT A RATE OF $400 A WEEK.

IN THE WAKE OF **SPACE INVADERS'** SUCCESS, GAME DESIGNERS TRIED TO OUTDO EACH OTHER.

ASTEROIDS. GALAXIAN. DEFENDER. EACH HARDER, MORE FEROCIOUS.

THE HAMMERING OF BUTTONS.
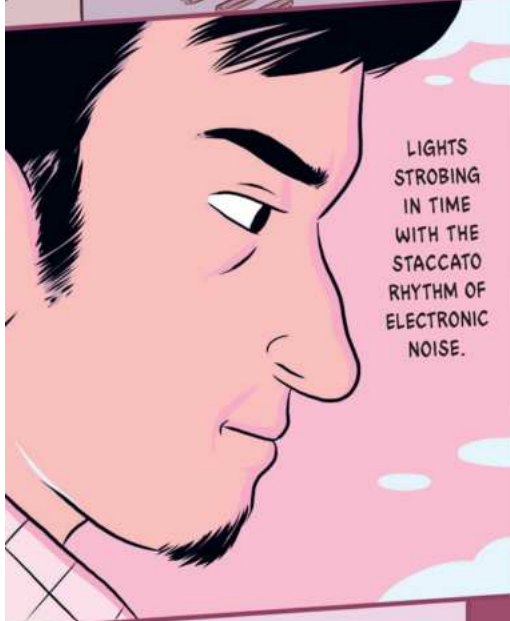
LIGHTS STROBING IN TIME WITH THE STACCATO RHYTHM OF ELECTRONIC NOISE.

THE DROPPING OF COINS.
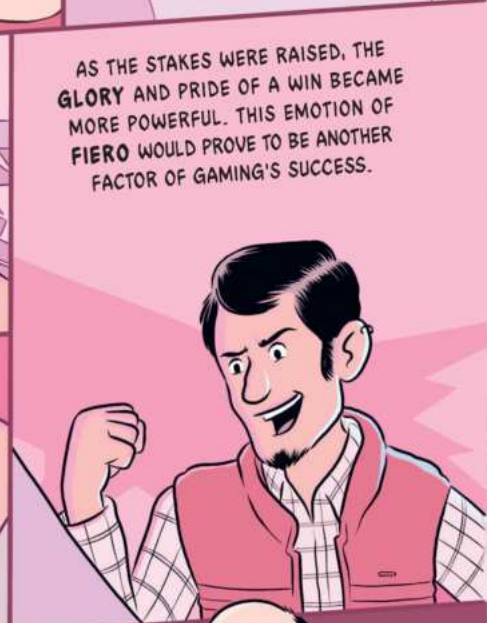
AS THE STAKES WERE RAISED, THE **GLORY** AND PRIDE OF A WIN BECAME MORE POWERFUL. THIS EMOTION OF **FIERO** WOULD PROVE TO BE ANOTHER FACTOR OF GAMING'S SUCCESS.

FOR A QUARTER, PLAYERS COULD TAP INTO THE PRIMAL SENSATIONS OF **FLOW** AND **FIERO** WITH EASE.
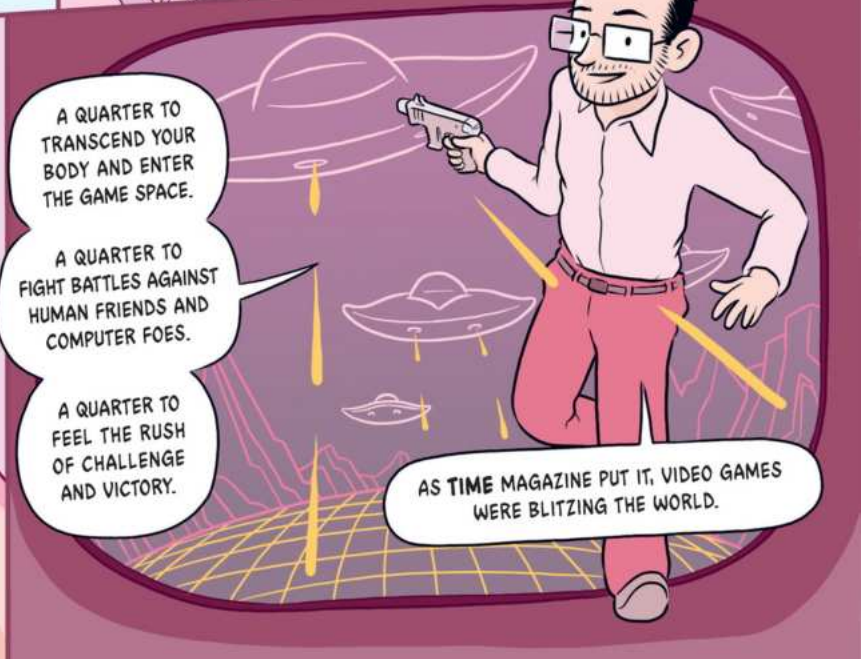
A QUARTER TO TRANSCEND YOUR BODY AND ENTER THE GAME SPACE.

A QUARTER TO FIGHT BATTLES AGAINST HUMAN FRIENDS AND COMPUTER FOES.

A QUARTER TO FEEL THE RUSH OF CHALLENGE AND VICTORY.

AS **TIME** MAGAZINE PUT IT, VIDEO GAMES WERE BLITZING THE WORLD.

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TORU IWATANI WAS DISSATISFIED.

IN HIS HOME COUNTRY OF JAPAN, GAMES WERE GROWING FAST. **SPACE INVADERS** HAD TORN ACROSS THE COUNTRY LIKE A **KAIJU**. IT HAD CONQUERED THE PLANET.

BUT ONE THING IT HAD FAILED TO DO WAS ATTRACT A BROAD AUDIENCE.

ACROSS THE WORLD, WOMEN WERE STAYING AWAY FROM ARCADES, AND GAMING WAS LOOKING LIKE AN INCREASINGLY MALE PURSUIT.

WITH **PAC-MAN** HE HOPED TO FIX THAT. DRAWING ON THE POPULAR JAPANESE **KAWAII** STYLE, **PAC-MAN** PRESENTED PLAYERS WITH A SIMPLE YET STRANGELY ADORABLE AVATAR WITH WHOM TO NAVIGATE ITS GHOST-INFESTED MAZES.

LITTLE MORE THAN A YELLOW CIRCLE WITH A PIZZA-SLICE CUT OUT OF IT, PAC-MAN WAS NONETHELESS INSTANTLY ICONIC, AND APPEALING TO EVERYONE.

ON RELEASE IN THE U.S. IN 1980, THE GAME EXPLODED, DRAWING WHOLE NEW AUDIENCES TO THE ARCADES. AND IN ITS WAKE CAME A DELUGE OF MERCHANDISING AND POP-CULTURE SPIN-OFFS.
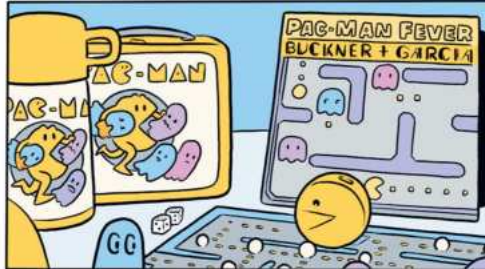
ITS SUCCESS SHOULD COME AS NO SURPRISE. THROUGHOUT HISTORY, FROM CAVE PAINTINGS AND GREEK MYTH TO RENAISSANCE SCULPTURE AND THE MOVING IMAGE, ART HAS ALWAYS BEEN PREOCCUPIED WITH HUMAN AND HUMAN-LIKE FORMS.

WE ARE A SPECIES FASCINATED WITH LIKENESS AND RECOGNITION, OUR EYES TRAINED TO SEEK OUT FACES IN THE WORLD AROUND US, OUR ART A MIRROR TO HUMAN EXPERIENCE.

ECHOING THE SIMPLE PLAYING PIECES OF THE EARLIEST BOARD GAMES, THE FIRST VIDEO GAMES DELIVERED THEIR ARCADE PLEASURES ON THE BACK OF BLOCKY, ABSTRACT GRAPHICS.

BUT TO THE HUMAN EYE, THE SIMPLE YELLOW FIGURE OF PAC-MAN WAS INFINITELY MORE APPEALING THAN THE BLOCKS AND TRIANGLES THAT PRECEDED IT.
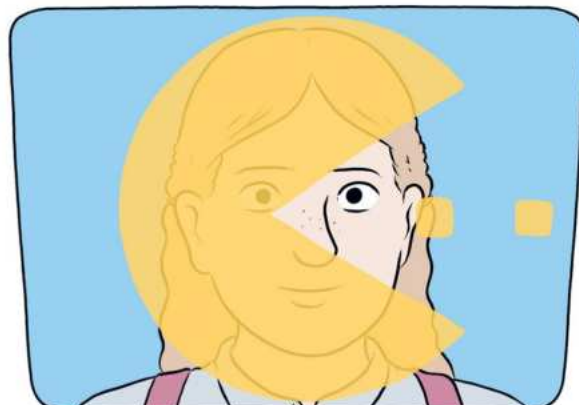
IN THAT YELLOW CIRCLE, WITH A WEDGE FOR A MOUTH, WE SAW SOMETHING OF OURSELVES.

WHAT **PAC-MAN** STARTED, **NINTENDO** WOULD CONTINUE.
ORIGINALLY A PLAYING CARD COMPANY FOUNDED IN 1889, BY
THE LATE 1970s NINTENDO HAD ENTERED THE HIGH-TECH WORLD
OF VIDEO GAMES WITH ARCADE MACHINES, RUDIMENTARY
HOME-CONSOLES AND THE HANDHELD **GAME & WATCH**.

BUT ITS EFFORTS TO BREAK
INTO NORTH AMERICAN ARCADES
HAD BEEN UNSUCCESSFUL.

IN THEIR WAREHOUSES THOUSANDS
OF UNSOLD CABINETS OF **RADAR
SCOPE** WERE GATHERING DUST.

A VISIONARY AND A DREAMER, **SHIGERU
MIYAMOTO** WAS PUT TO WORK ON A
GAME DESIGNED TO RESCUE THESE
CABINETS FROM THE SCRAP-HEAP.

INITIALLY BASED ON THE POPULAR AMERICAN COMIC STRIP **POPEYE**,
HIS GAME SOON EVOLVED INTO SOMETHING ELSE ENTIRELY.

A CARPENTER.   A GIRL.   A GORILLA.

ALL WRAPPED UP IN A 'BIZARRE LOVE TRIANGLE' REMINISCENT
OF **KING KONG** OR **BEAUTY AND THE BEAST**.

THE
AMERICANS
TASKED
WITH
SELLING IT
THOUGHT
IT WAS
DOOMED
TO FAIL.
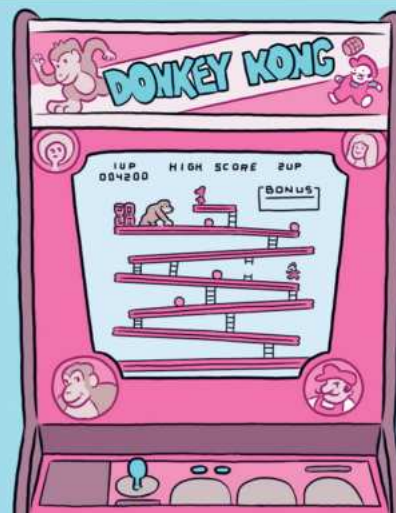
BUT
**DONKEY
KONG**
WENT ON
TO BECOME
ONE OF
THE MOST
POPULAR
ARCADE
GAMES OF
ALL TIME.

LIKE **PAC-MAN** A YEAR EARLIER, **DONKEY KONG** PROUDLY PLACED ITS CHARACTERS FRONT AND CENTRE.

UP UNTIL THIS TIME, GAMES HAD LARGELY BEEN DESIGNED AND PROGRAMMED BY THE SAME PERSON.

STRUGGLING AGAINST THE LIMITS OF TECHNOLOGY, WORKING TO MEET DEMAND AND DEADLINE, EARLY DESIGNERS TURNED TO ABSTRACT, BLOCKY FORMS TO REPRESENT THE ACTION.

MEMORABLE CHARACTERS WERE ALL BUT ABSENT.

HAVING SEEN **PAC-MAN**, SHIGERU MIYAMOTO KNEW GAMES COULD DELIVER SO MUCH MORE. UNABLE TO PROGRAM HIMSELF, HE DEDICATED HIS ATTENTION TO CRAFTING THE GAME'S CHARACTERS AND STORY, WORKING CLOSELY WITH THE GAME'S PROGRAMMERS TO BRING HIS VISION TO LIFE.

IT MAY SEEM SELF-EVIDENT NOW, BUT MIYAMOTO'S INSISTENCE THAT HIS GAME HAVE A STORY WAS GROUNDBREAKING.

FROGGER

PONG

DONKEY KONG

COMPARED TO ALL THAT CAME BEFORE IT, **DONKEY KONG** WAS ALIVE WITH PERSONALITY. A CARTOON YOU COULD CONTROL. A GAME WITH A HEART.

DONKEY KONG'S HERO, JUMPMAN, IS A MASTERCLASS IN EFFICIENT AND ICONIC CHARACTER DESIGN.

FIRST AND FOREMOST CAME THE CHARACTER HIMSELF.

MIYAMOTO WANTED 'A BLUE-COLLAR HERO', A CHARACTER EVERYONE COULD RELATE TO.

THEN CAME DESIGN. WITH ONLY A 16X16 PIXEL GRID TO WORK WITH, EACH ONE WAS PUT TO WORK TO MAKE THIS CHARACTER AS **MEMORABLE** AND **ICONIC** AS POSSIBLE.

A **HAT** WAS SIMPLER TO ANIMATE THAN HAIR.

A **MOUSTACHE** LOOKED BETTER THAN A MOUTH AND GAVE CHARACTER TO HIS FACE.

MIYAMOTO ADDED **DUNGAREES** TO OFFSET HIS HERO'S ARMS AND EMPHASIZE HIS MOVEMENT.

AND **VIVID COLOURS** LOOKED GREAT AGAINST THE GAME'S DARK BACKGROUNDS.

AS GAMES JOURNALIST MARC NIX PUTS IT, THESE DECISIONS WERE 'ELEGANT SOLUTIONS TO PRACTICAL, 8-BIT PROBLEMS'.

MIYAMOTO COULDN'T HAVE KNOWN THAT HE WAS BUILDING THE FOUNDATIONS OF NINTENDO'S FUTURE SUCCESS, OR CREATING A CHARACTER AS ICONIC AS **MICKEY MOUSE** OR **SUPERMAN**.

JUMPMAN WAS RENAMED **MARIO**, AND THE MOST SUCCESSFUL GAMING FRANCHISE OF ALL TIME WAS BORN.

BOLSTERED BY THEIR ARCADE HIT, NINTENDO TOOK AIM AT THE HOME MARKET.

IN 1983 THEY RELEASED THE **FAMICOM** IN JAPAN, AND BY 1985 THE CONSOLE WAS IN NORTH AMERICAN SHOPS, RENAMED THE NINTENDO ENTERTAINMENT SYSTEM, OR **NES**.

FROM MARIO AND LUIGI TO LINK IN **THE LEGEND OF ZELDA** (1986) AND SAMUS IN **METROID** (1986), THE CONSOLE'S SUCCESS WAS BUILT ON NINTENDO'S SKILL AT CRAFTING ENDURING AND ICONIC CHARACTERS.

MANY HAD PRONOUNCED GAMING DEAD IN 1983 WHEN SLIDING CONSUMER INTEREST SANK NUMEROUS CONSOLES AND PUBLISHERS, AND FORCED ATARI TO BURY 700,000 UNSOLD CARTRIDGES IN A NEW MEXICO LANDFILL.

BUT NINTENDO PROVED THEM WRONG.

THE **NES** WAS A SMASH HIT.
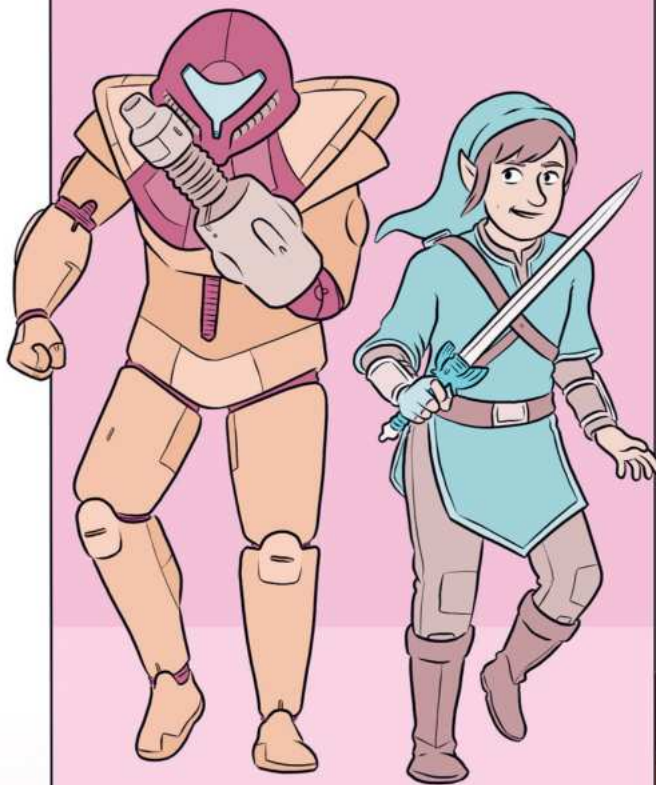
THEIR STORIES WERE LITTLE MORE THAN STOCK ARCHETYPES, DRAWING ON FAIRY TALES, FANTASY NOVELS AND POP CULTURE MOVIES LIKE **ALIEN** (1979) AND THE **RAMBO** SERIES, BUT TO AUDIENCES TIRED OF CONTEXT-FREE BLAST-EM-UPS THEY WERE A BREATH OF FRESH AIR.

DESPITE THE COLLAPSE OF ITS COMPETITORS, NINTENDO WOULDN'T HAVE THE INDUSTRY TO ITSELF FOR LONG.

IN 1988, **SEGA** LAUNCHED THE **MEGA DRIVE** AND BY 1991 MARIO WAS GOING HEAD-TO-HEAD WITH SONIC THE HEDGEHOG IN A CONSOLE WAR BETWEEN THE TWO COMPANIES.

BUT THE SUCCESS OF MARIO AND SONIC GOES WELL BEYOND THEIR ICONIC CHARACTER DESIGN. IN **SONIC THE HEDGEHOG** (1991), AS WE BLAST THROUGH GREEN HILL ZONE, DODGING ENEMIES AND COLLECTING COINS, WE EXPERIENCE THE **VICARIOUS THRILL** OF SPEED AND MOVEMENT.

WE **HOLD OUR BREATH** AS SONIC LAUNCHES OFF A RAMP AND **FLINCH IN PAIN** AS HE IS STRUCK, SPILLING RINGS ACROSS THE SCREEN.

AS WE MASTER A GAME, OUR REFLEXES QUICKEN.

OUR HANDS AND THE CONTROLLER MELT TOGETHER.

OUR SYNAPSES DIRECTLY WIRED TO THE BODY OF THE CHARACTER ONSCREEN.

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THIS **OUT-OF-BODY EXPERIENCE** HAD BEEN EVIDENT SINCE THE VERY FIRST VIDEO GAMES.

BUT WHEN COUPLED WITH VIVIDLY REALIZED CHARACTERS, IT BECAME A TRULY POWERFUL FORCE.

AT THE PUSH OF A BUTTON VIDEO GAMES ALLOWED US TO STRETCH OUT BEYOND THE MEAGRE CONFINES OF **OUR OWN BODIES** TO INHABIT OTHERS.
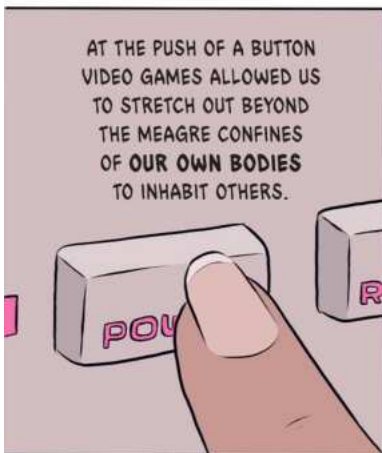
NO LONGER WERE YOU MERELY DRIVING A TANK OR PILOTING A SPACESHIP, YOU WERE TAKING CONTROL OF A FLESH-AND-BLOOD CHARACTER.

YOU **BECAME** THEM.

THIS TAPPED INTO THE OLDEST KINDS OF PLAY, GIVING US WHAT VISIONARY THEORIST **JANET H MURRAY** CALLS 'THE PLEASURE OF TRANSFORMATION'.
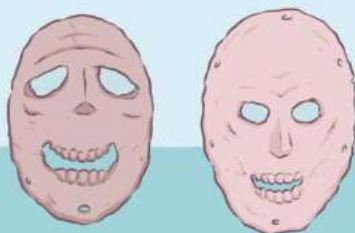
THE CHANCE TO BECOME SOMEONE OR SOMETHING ELSE, EXPERIENCE NEW WAYS OF BEING, AND SEE LIFE FROM DIFFERENT PERSPECTIVES.

IF GAMES FACILITATE OUR TRANSFORMATION INTO OTHER BODIES, IT IS THE VIDEO GAME **CONTROLLER** THAT ALLOWS THIS TO HAPPEN. OVER THE LAST SIX DECADES, GAME DESIGNERS HAVE BEEN WORKING TO BETTER BRIDGE THE GAP BETWEEN THE GAME BODY AND OUR OWN.

EARLY ATTEMPTS, LIKE THE OSCILLOSCOPE DIALS OF **TENNIS FOR TWO** OR THE KLUDGED-TOGETHER CONTROLS OF **SPACEWAR!** HARNESSED HARDWARE FOUND IN THE LAB.
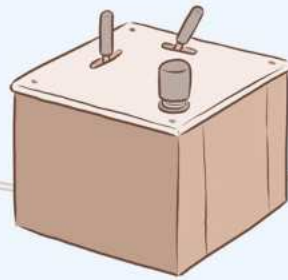
BUT AS THE MEDIUM EVOLVED, SO DID THE MANNER OF CONTROL.

THE JOYSTICK.
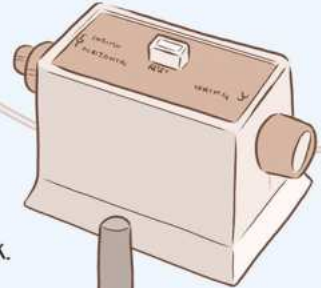
THE GAMEPAD.

THE MOUSE.

THE TOUCH SCREEN.

EACH REFINEMENT MADE GAMEPLAY MORE COMFORTABLE, MORE RESPONSIVE.
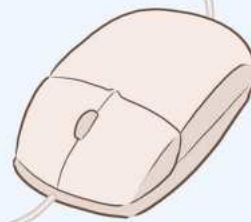
THE MOTION CONTROLLER.
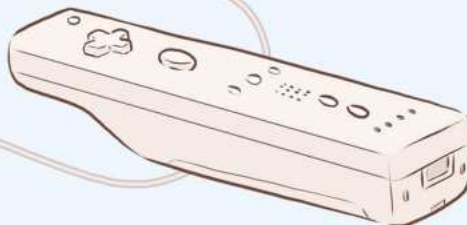
THE ADAPTIVE CONTROLLER.

EACH ALLOWED US NEW WAYS TO INTERACT, BRINGING US INTO CLOSER RELATION WITH THE GAME.

SOME TINKERED WITH MORE **IMMERSIVE** FORMS OF INTERACTION. RALPH BAER'S PIONEERING **MAGNAVOX ODYSSEY** CONSOLE INCLUDED A REALISTIC LOOKING RIFLE THAT ALLOWED PLAYERS TO SHOOT AT TARGETS ONSCREEN.

THIS SIMPLE IDEA SPAWNED A TREND THAT CONTINUES TO THIS DAY, SEEN MOST ICONICALLY IN THE PLASTIC ACCESSORIES OF **GUITAR HERO** OR THE PHENOMENALLY SUCCESSFUL WII REMOTE.

OTHERS HAVE FOUGHT TO REMOVE THE HANDHELD CONTROLLER ENTIRELY, HARNESSING VOICE COMMANDS, GESTURES OR BODY MOVEMENTS IN THE HOPE OF CREATING AN EVEN GREATER SENSE OF IMMERSION.

I LOVE THE POWER GLOVE. IT'S SO **BAD**.

BUT SOMETHING ABOUT A CONTROLLER YOU CAN HOLD CONTINUES TO APPEAL.

THESE ARE VERSATILE, ICONIC OBJECTS, AS RECOGNIZABLE AS GAMING'S MOST MEMORABLE CHARACTERS.

THE FEELING OF THEM IN YOUR HAND ENOUGH TO SPARK A WAVE OF NOSTALGIA FOR GAMES LONG SINCE PLAYED.

NINTENDO 64

SUPER SMASH BROS

NINTENDO 64

MORE THAN JUST AN INERT AND UNASSUMING ARTEFACT, THE VIDEO GAME CONTROLLER
PLAYS A **CRUCIAL ROLE** IN ALLOWING US TO EMBODY THE CHARACTERS WE PLAY.

WHEN WE PICK UP A TOOL, HOP ON A BIKE, OR GRASP A VIDEO GAME CONTROLLER, **BIMODAL NEURONS** IN THE BRAIN FIRE UP TO BRING THESE OBJECTS INTO A 'TEMPORARILY EXTENDED BODY IMAGE'.

THEY BECOME A PART OF US.

IT'S CALLED **PROPRIOCEPTION** ... THE PHENOMENON THAT ALLOWED OUR NEOLITHIC ANCESTORS TO WIELD A SPEAR OR CLUB WITH SUCH PRECISION.

AND TODAY IT'S WHAT LETS US DRIVE A CAR, USE A HAMMER OR PLAY TENNIS.
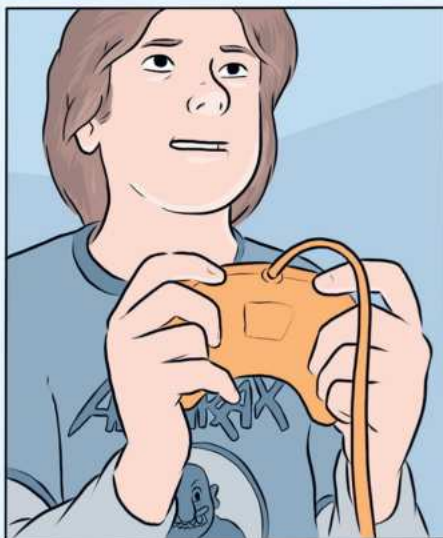
WITH VIDEO GAMES, PROPRIOCEPTION GOES ONE STEP FURTHER. WHEN WE PLAY, OUR MIND REACHES OUT BEYOND OUR BIOLOGICAL BORDERS TO ENCOMPASS NOT ONLY THE CONTROLLER, BUT BY EXTENSION, THE BODY OF THE CHARACTER WE CONTROL.
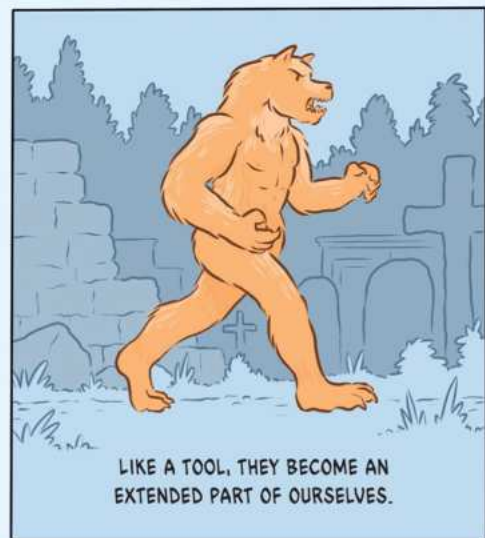
LIKE A TOOL, THEY BECOME AN EXTENDED PART OF OURSELVES.

MEANWHILE, ANOTHER FACTOR OF HUMAN PSYCHOLOGY BRINGS US EVEN CLOSER TO THE ONSCREEN BODY.

WHEN WE SEE OTHER BODIES IN MOTION, **MIRROR NEURONS** ACTIVATE, SPARKING ACTIVITY IN THE PRECISE AREA OF THE BRAIN RESPONSIBLE FOR THAT MOVEMENT IN OUR OWN BODY.
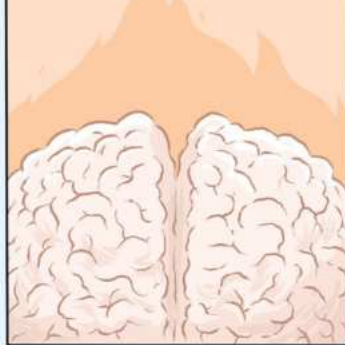
THE SAME HAPPENS WHEN WE PLAY GAMES. WHEN OUR ONSCREEN SURROGATE JUMPS, THE JUMPING PART OF OUR BRAIN CATCHES FIRE.

TOGETHER, OUR **MIRROR NEURONS** AND **PROPRIOCEPTION** CREATE A LOOP OF INPUT AND RESPONSE THAT MAKE US FEEL AT ONE WITH THE CHARACTER WE CONTROL.
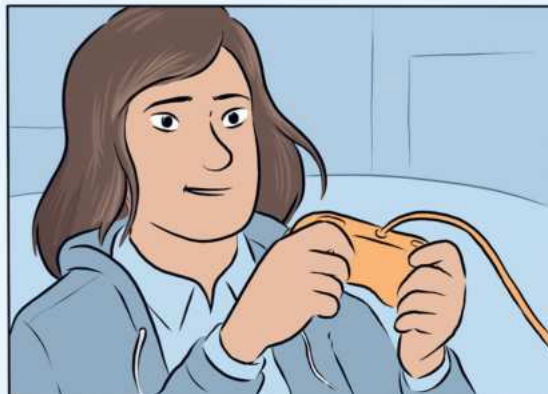
PROPRIOCEPTION EXTENDS OUR BODY INTO ANOTHER, WHILE MIRROR NEURONS MAKE OUR MIND 'FEEL' THAT BODY'S MOVEMENTS AS OUR OWN ON A SUBCONSCIOUS LEVEL.

THIS SPECTACULAR INTEGRATION WITH TECHNOLOGY HAS INSPIRED THEORIST **JOSH CALL** TO DESCRIBE THE HYBRID OF PLAYER AND ONSCREEN AVATAR AS 'A CYBORG BODY — A DIGITAL AND MECHANICAL EXTENSION OF THE PLAYER'.

HERE GAMES COME ALIVE IN A WAY THAT NO OTHER MEDIUM CAN, BLURRING THE BOUNDARIES BETWEEN ART AND EXPERIENCE.
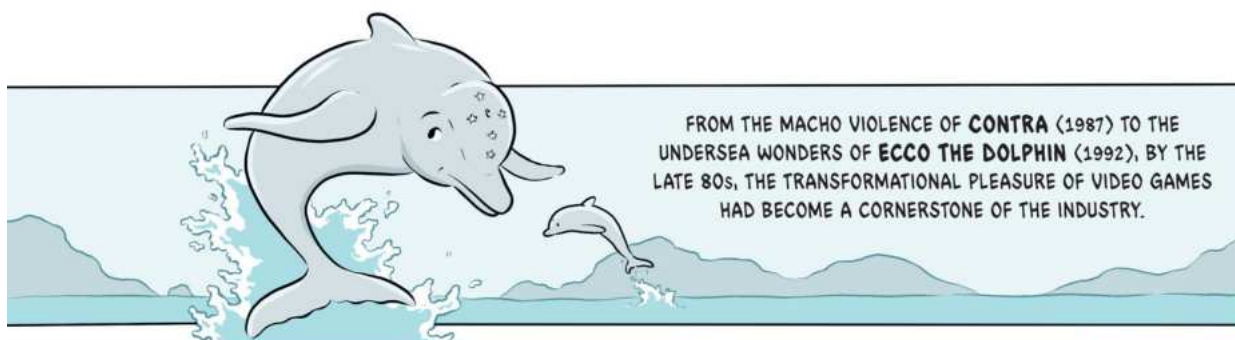
FROM THE MACHO VIOLENCE OF **CONTRA** (1987) TO THE UNDERSEA WONDERS OF **ECCO THE DOLPHIN** (1992), BY THE LATE 80s, THE TRANSFORMATIONAL PLEASURE OF VIDEO GAMES HAD BECOME A CORNERSTONE OF THE INDUSTRY.

VIDEO GAMES PROMISED THE CHANCE TO ACT OUT FANTASIES OF BECOMING SOMEONE, OR SOMETHING, ELSE.

BY SIMPLY SLAPPING IN A CARTRIDGE AND TURNING ON THEIR CONSOLE, A PLAYER COULD GUN DOWN PERPS AS ROBOCOP OR SCORE A WINNING TOUCHDOWN AS JOE MONTANA.

WHILE OUR OWN BODIES CONFINE US TO THE LIMITS OF OUR BIOLOGY, VIDEO GAMES **UNSHACKLE** US FROM THOSE LIMITS.

IN **STREET FIGHTER** (1987), A SIMPLE BUT WELL-PRACTISED FLICK OF THE JOYSTICK AND THE RIGHT BUTTONS LETS YOU UNLEASH SPECTACULAR MARTIAL ARTS MOVES ONSCREEN.

IT'S A POWERFUL SENSATION, PROVIDING THE PLAYER WITH A SENSE OF SKILL AND SUCCESS ALL TOO OFTEN ABSENT FROM OUR DAY-TO-DAY LIVES.

VIDEO GAMES OFFER THE CHANCE TO INHABIT BODIES MORE POWERFUL AND PERFECT THAN OUR OWN.
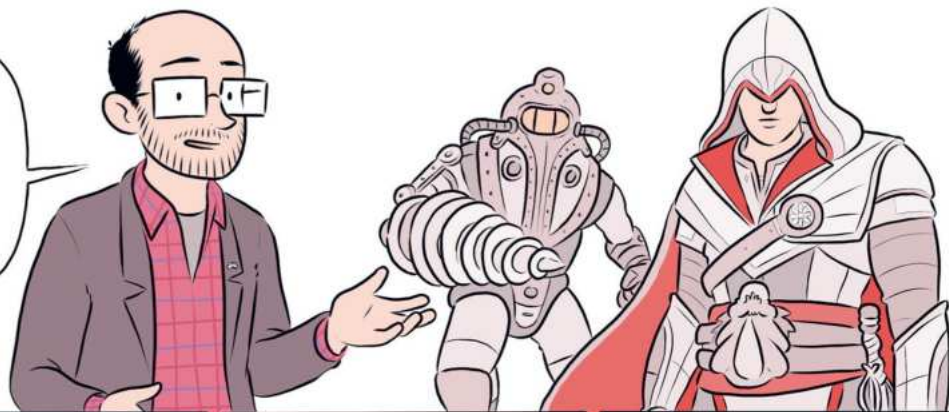
BODIES THAT NEVER TIRE OR STUMBLE.

BODIES THAT CAN RECOVER FROM EVEN FATAL MISTAKES, REINCARNATED AT THE PUSH OF A BUTTON.

BODIES ABLE TO TRAVERSE CITIES AND LANDSCAPES WITH BALLETIC EASE.

FROM THE CYBORG AUGMENTATIONS OF **DEUS EX** (2000) TO THE NEUROMOD UPGRADES OF **PREY** (2017), THESE ARE BODIES THAT ARE MUTABLE AND UPGRADABLE IN ALL THE WAYS THAT WE ARE NOT, ALLOWING US TO UNLOCK NEW SKILLS AND POWERS WITHOUT ANY REAL EFFORT OR EXPENSE.
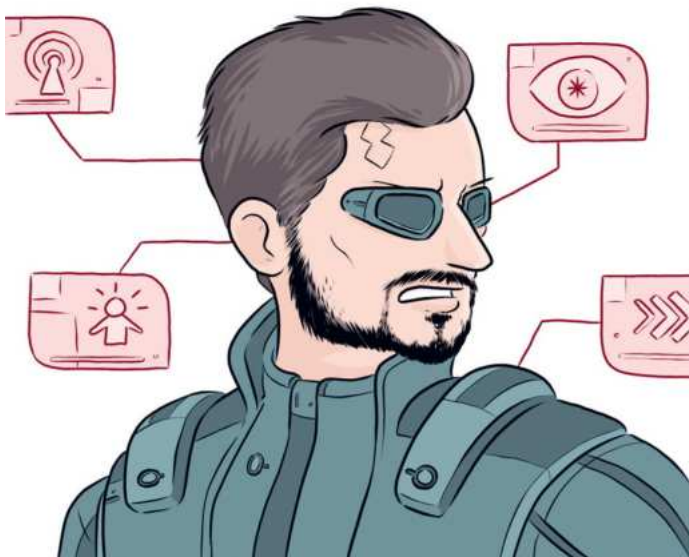
IN THESE WAYS, GAMES INDULGE OUR DESIRE TO ESCAPE FROM THE MUNDANE, GIVING US THE POWER TO **ENACT OUR WILL** AND MAKE CHANGE IN A VIRTUAL SPACE WHEN WE MIGHT BE POWERLESS IN OUR OWN.

AS THE 1980s DREW TO A CLOSE, A NEW AMBITION FOR VIDEO GAMES BEGAN TO EMERGE. NOT JUST TRANSFORMATION, BUT **IMMERSION**.

FOR THE LAST 30 YEARS, THE VAST MAJORITY OF GAMES HAD SITUATED PLAYERS IN A **THIRD-PERSON PERSPECTIVE**, OBSERVING THE GAME WORLD FROM ABOVE OR TO THE SIDE.
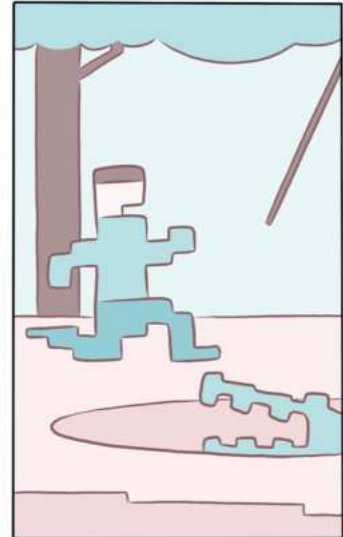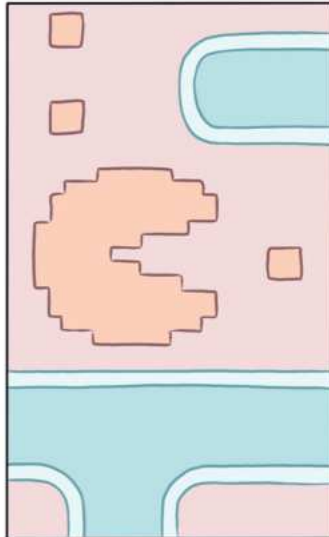
GAMES LIKE **BATTLEZONE** (1980) AND **WING COMMANDER** (1990) HAD TOYED WITH THE FIRST-PERSON PERSPECTIVE OF SITTING IN A COCKPIT.
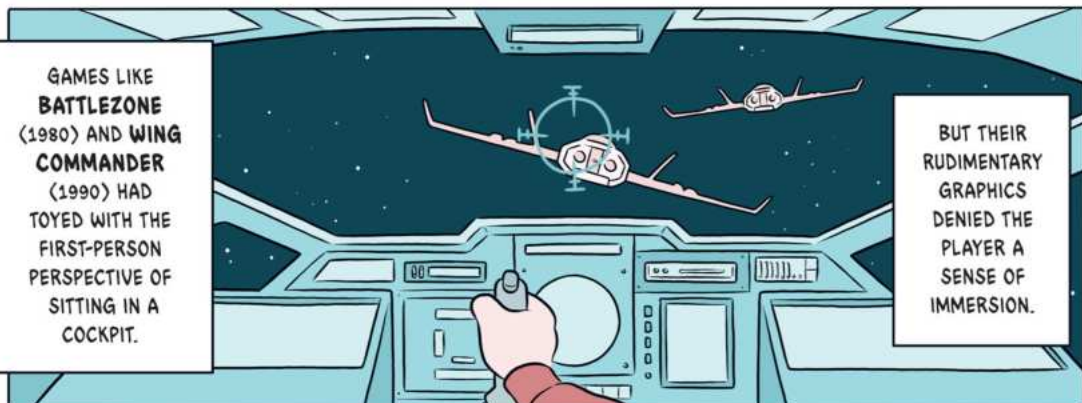
BUT THEIR RUDIMENTARY GRAPHICS DENIED THE PLAYER A SENSE OF IMMERSION.

FOR GAME DESIGNERS **JOHN CARMACK** AND **JOHN ROMERO** IT SIMPLY WASN'T ENOUGH. THEY WANTED YOUR BOOTS ON THE GROUND, ABLE TO MOVE THROUGH THREE-DIMENSIONAL SPACES AS IF YOU WERE THERE.

COMMANDER KEEN

COOL GUYS

A GIFTED PROGRAMMER, CARMACK GOT TO WORK.
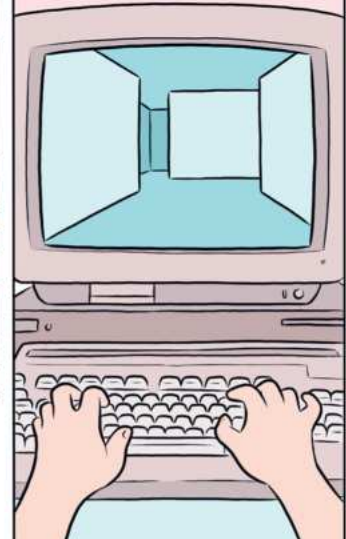
IN THE RAUCOUS OFFICES OF **ID SOFTWARE**, MONTHS OF EXPERIMENTATION AND ITERATION FOLLOWED.

BUT IT WOULDN'T BE UNTIL THE SICKENING ONE-TWO PUNCH OF **WOLFENSTEIN 3D** (1992) AND **DOOM** (1993) THAT CARMACK'S WORK REALLY PAID OFF.

BRIMMING WITH SATANIC DETAIL AND GORY REALISM, **DOOM** THRUST PLAYERS STRAIGHT INTO THE BOOTS OF AN ANONYMOUS SPACE MARINE, TASKED WITH SINGLE-HANDEDLY SAVING THE UNIVERSE FROM AN INVASION OF HELLISH CREATURES.

TO PLAYERS IN THE EARLY 90s, **DOOM** WAS A REVELATION.

NOT JUST A STREAM OF PLATFORMS AND PITFALLS, NOT JUST A MAZE TO GET LOST IN. THIS WAS A CONCRETE, THREE-DIMENSIONAL SPACE THAT YOU COULD TRAVERSE **AS IF YOU WERE THERE.**

AND UNLIKE MARIO OR SONIC, YOU WEREN'T CONTROLLING A **CHARACTER**, FLOATING ABOVE OR BESIDE THE ACTION ...

THESE WERE **YOUR** EYES, **YOUR** HANDS, **YOUR** HELL. WITH ONLY A TRUSTY SHOTGUN STANDING BETWEEN YOU AND ANNIHILATION.

MORE THAN ANYTHING THAT HAD COME BEFORE IT, **DOOM** WAS IMMERSIVE, EXPERIENTIAL.

AGH!

YOU ACTUALLY FEEL FEAR WHERE A DEMON IS SHOOTING AT YOU. BACK THEN, WITH A FIREBALL COMING AT YOU, PEOPLE WOULD PHYSICALLY DODGE IN THEIR CHAIR, AND THAT WAS SOMETHING NEW TO GAMES.

DOOM ARTIST **KEVIN CLOUD.**

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IMMEDIATELY, **DOOM** ROCKET-JUMPED TO FAME AND NOTORIETY. AND IN ITS IMPACT CRATER THE FIRST-PERSON SHOOTER GENRE WAS BORN INTO THE WORLD, SNARLING.

HERE WAS A GENRE MARKED BY ITS VOICELESS, BLANK-SLATE HEROES. VESSELS PERFECT FOR OUR EMBODIMENT, AND ACTING OUT OUR POWER FANTASIES.

AND AS THE GENRE GREW, DESIGNERS FOUGHT TO OUTDO EACH OTHER. HEIGHTENING THE IMMERSION, UPPING THE GORE, MAKING PLAYERS FEEL AS IF THEY WERE IN THE MIDST OF THE ACTION.

IN MANY PEOPLE'S EYES IT WAS THE MEDIUM'S DEFINING GENRE. THIS WAS THE DREAM REALIZED. OR MAYBE THE NIGHTMARE.

THIS WAS ESCAPE. THIS WAS TRANSCENDENCE.

THIS WAS THE HUNT, MADE REAL.

AFTER THE SUCCESS OF **DOOM**, THE GAMES INDUSTRY BEGAN TO RECALIBRATE, FOCUSING ITS FULL ATTENTION ON A DEMOGRAPHIC THAT WAS PREDOMINANTLY YOUNG, WHITE AND MALE.

IN THE MAIN, NEW CONSOLES WERE MARKETED FOR THEIR **POWER** AND **SPEED**. REALISM WAS JUDGED NOT ON THE QUALITY AND DEPTH OF THE CHARACTERS' PERSONALITIES, BUT ON THE FIDELITY OF EXPLOSIONS AND BLOOD, THE VERISIMILITUDE OF A BODY'S CURVES AND FLESH.

FINISH HIM!!

AS ADVENTURE GAMES, FLIGHT SIMULATIONS AND OTHER GENRES FELL BY THE WAYSIDE, MAINSTREAM VIDEO GAMES DOUBLED DOWN ON ACTION-PACKED SPECTACLES CENTRED AROUND WHITE, MALE HEROES. AVATARS DESIGNED TO APPEAL TO THIS TARGET DEMOGRAPHIC.
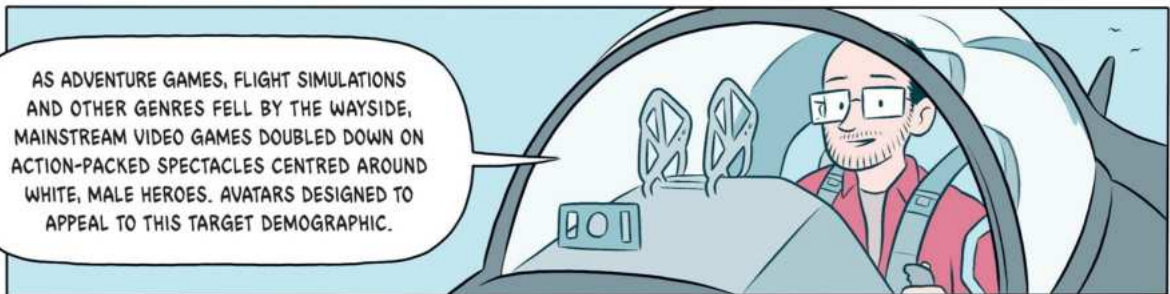
AS WRITER **RILEY MacLEOD** PUTS IT, 'THE MEN'S BODIES GIVEN TO YOU IN MOST GAMES ARE TALL AND BROADLY-MUSCLED, DESIGNED WITH ALL THE ELEGANCE OF TANKS. THEY'RE IDEALIZED AND INNATELY POWERFUL, ADORNED WITH GRIM FACES CHISELED INTO NECKLESS HEADS.'

THIS WAS THE POWER FANTASY MADE FLESH: MALE BODIES REDUCED TO MACHINES OF BRUTE FORCE AND VIOLENCE.

ECHOING TRENDS SEEN THROUGHOUT POP CULTURE, THE VIDEO GAME MEDIUM'S OBSESSION WITH THIS VERY SPECIFIC VISION OF MASCULINITY HAS A ROLE IN SHAPING OUR UNDERSTANDING OF WHAT IT MEANS TO BE A MAN.
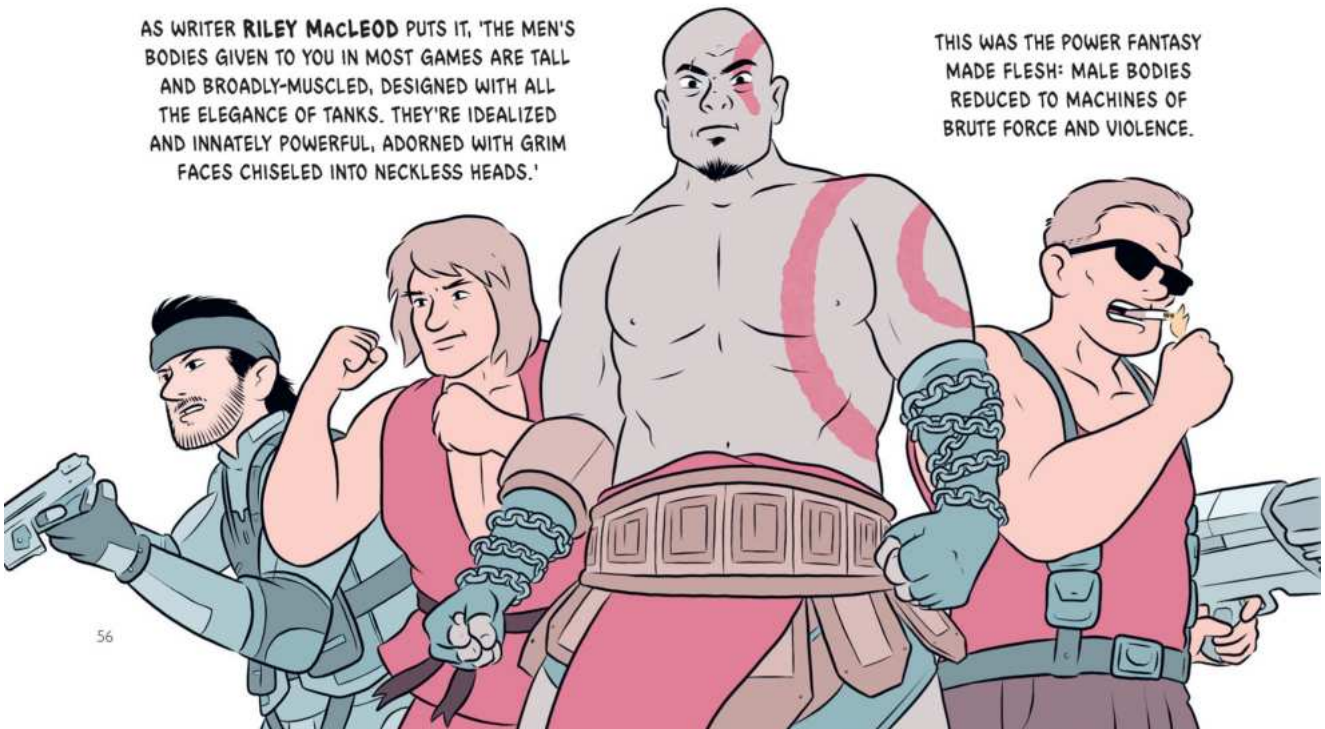
FROM THE MUSCLEBOUND BRAWLERS OF **STREETS OF RAGE** (1991) TO THE GRIZZLED SOLDIERS OF **GEARS OF WAR** (2006), THESE IMAGES ADD TO CULTURAL PRESSURES TOWARDS A CERTAIN TYPE OF PHYSIQUE, AND HAVE BEEN PROVEN TO PLAY A ROLE IN BODILY ANXIETY.

MEANWHILE, THESE GAMES **REINFORCE** CULTURAL IDEAS ABOUT HOW MEN SHOULD BEHAVE. AS MacLEOD PUTS IT, VIDEO GAME MEN ACT LIKE 'GREEDY, UNPOPULAR CHILDREN', WHO 'STORM IN AND TAKE WHAT THEY WANT, DESTROYING EVERYTHING IN THE SINGLE-MINDED PURSUIT OF THEIR DESIRES'.

A MALE HERO'S **WORTH** LIES IN THEIR ABILITY TO SOLVE PROBLEMS NOT WITH THEIR WITS, EMPATHY OR CURIOSITY BUT WITH PHYSICAL FORCE AND A PERFECTLY TIMED SHOTGUN BLAST.

IN A WORLD WHERE MALE ENTITLEMENT AND VIOLENCE IS A REAL AND DEVASTATING PROBLEM, THESE GAMES HELP REINFORCE DAMAGING IDEAS ABOUT WHAT MEN CAN AND SHOULD BE.

WHILE IN THE REAL WORLD, GENDER IS EXPRESSED AS PART OF AN ARRAY OF POSSIBILITIES, VIDEO GAMES ARE OFTEN COMPARATIVELY SIMPLISTIC, PRESENTING GENDER NOT JUST AS A BINARY BUT AS A SET OF **POLAR EXTREMES**.

LEON! HELP!

SINCE THE VERY EARLIEST DAYS OF VIDEO GAME STORYTELLING, CREATORS HAVE BEEN DRAWING ON CLASSIC FAIRY-TALE TROPES.
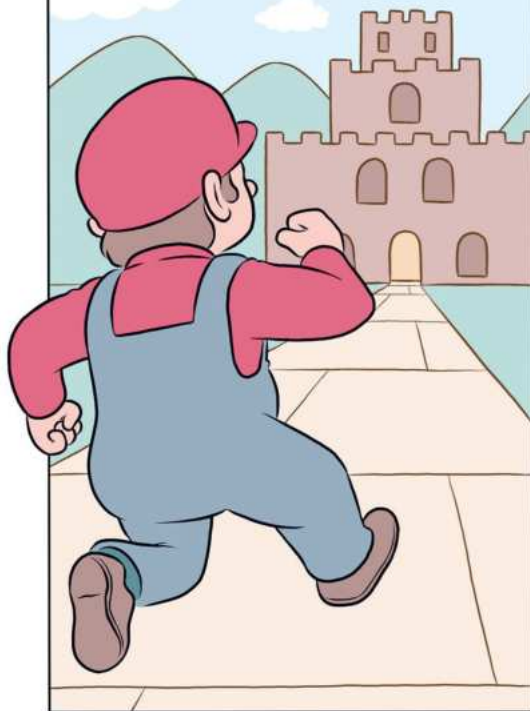
AS A RESULT, MEN HAVE LARGELY BEEN THE HEROES, DRIVING THE STORY FORWARD IN PURSUIT OF THEIR GOALS.

THANK YOU, MARIO! BUT OUR PRINCESS IS IN ANOTHER CASTLE!

YOU HAVE **GOT** TO BE KIDDING ...

ALL WHILE WOMEN HAVE BEEN PRESENTED AS OBJECTS LACKING AN INTERNAL LIFE OR AGENCY OF THEIR OWN.

THERE TO BE PROTECTED, RESCUED OR CLAIMED AS A PRIZE.

OF COURSE, SOME EARLY EFFORTS WERE MADE TO INCLUDE PLAYABLE FEMALE HEROES, BUT MOST MERELY WORKED TO REINFORCE GENDER STEREOTYPES.
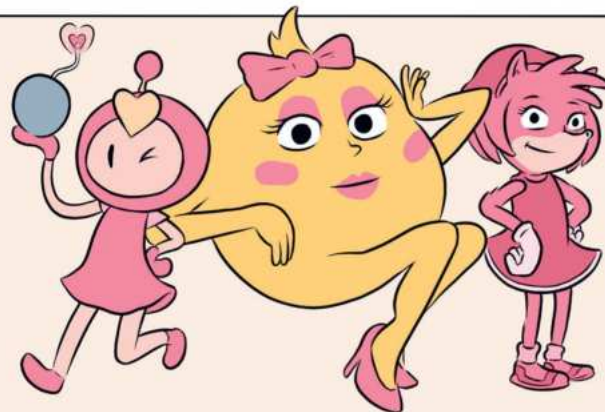
'MS PAC-MAN OFFERS ITS FEMALE PLAYERS LITTLE MORE THAN AN OXYMORONIC TITLE AND A FEMALE MASQUERADE; THE VORACIOUS DOT IS MERELY DRESSED UP IN TRADITIONAL PINK GENDER CODING, LONG EYELASHES, AND LIPSTICK TO CREATE PAC-MAN'S FEMALE TWIN.'

— MEDIA CRITIC **MARSHA KINDER**

TODAY, FROM LARA CROFT IN **TOMB RAIDER** (1996) TO ALOY IN **HORIZON ZERO DAWN** (2017), VIDEO GAMES OFFER AN EVER INCREASING NUMBER OF STRONG, ICONIC FEMALE HEROES TO TURN TO.

YET DESPITE THEIR POWER, SKILL AND OFTEN COMPLEX CHARACTERS, FEMALE HEROES ARE STILL SUBJECTED TO A SET OF VERY NARROW EXPECTATIONS.

FROM IMPRACTICAL, SEXUALIZED COSTUMES TO EXAGGERATED HIP-SWAY AND SO-CALLED 'JIGGLE PHYSICS', THE BODIES OF FEMALE HEROES ARE DESIGNED TO APPEAL TO AN ASSUMED STRAIGHT, MALE PLAYER.
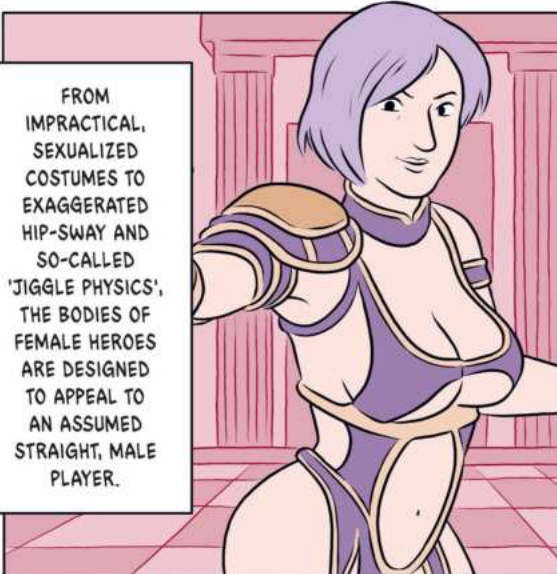
THERE HAVE BEEN NOTABLE EXCEPTIONS. ZARYA IN **OVERWATCH** (2016) IS A MUSCULAR FEMALE HERO WITH A POWERFUL PHYSIQUE RARELY SEEN IN FEMALE CHARACTERS.

MEANWHILE MORE NARRATIVE-FOCUSED GAMES LIKE **VIRGINIA** (2016), **NIGHT IN THE WOODS** (2017) AND **LIFE IS STRANGE** (2015) OFFER FEMALE PROTAGONISTS DEFINED NOT BY THEIR BODIES BUT THEIR RICH INNER LIVES.

HOWEVER, THE OVERWHELMING TREND IS STILL TOWARDS **MALE CENTRALITY**. AS FEMINIST CRITIC **KATHA POLLITT** PUTS IT, 'THE MESSAGE IS CLEAR. BOYS ARE THE NORM, GIRLS THE VARIATION; BOYS ARE CENTRAL, GIRLS PERIPHERAL; BOYS ARE INDIVIDUALS, GIRLS TYPES. BOYS DEFINE THE GROUP, ITS STORY AND ITS CODE OF VALUES. GIRLS EXIST ONLY IN RELATION TO BOYS.'

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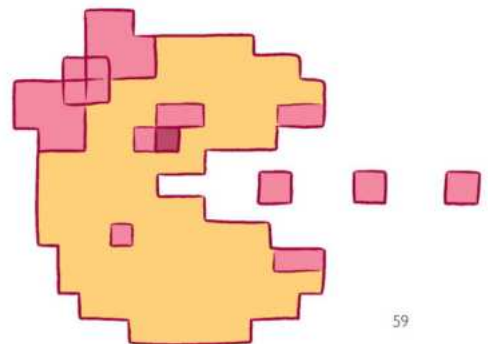
IF HEROIC VIDEO GAME ROLES ARE DOMINATED BY WHITE MEN, THE POSITION OF VILLAIN IS OFTEN GIVEN TO BODIES EXCLUDED FROM MAINSTREAM CULTURE'S IDEA OF 'NORMALITY'.

FROM SCARS AND DEFORMITIES TO MENTAL ILLNESS, TIME AND AGAIN GAMES HAVE VILIFIED MARGINALIZED PEOPLE BY CASTING THEM AS THE **ENEMY**.

FROM THE ARAB FIGHTERS OF **CALL OF DUTY 4: MODERN WARFARE** (2007), TO THE SWARMS OF AFRICAN ZOMBIES IN **RESIDENT EVIL 5** (2009), VIDEO GAMES REGULARLY EXPLOIT CULTURAL ANXIETIES SURROUNDING RACE IN THEIR SEARCH FOR A VILLAIN.

IN THESE GAMES NON-WHITE BODIES BECOME CANNON FODDER FOR THE HERO TO MOW DOWN, DISPATCHED WITHOUT A MOMENT'S REMORSE.

WRITER **SIDNEY FUSSELL** ARGUES THAT, FROM HEROES TO VILLAINS, FAR TOO MANY GAMES DRAW ON WHITE CULTURE'S RACIST IMAGE OF THE BLACK MALE BODY AS 'IMPOSING, HULKING, BRUTISH'.

'WHEN THE IMAGE OF BLACK MEN IN GAMES UNIFORMLY EMPHASIZES THEIR BODIES AS MUSCULAR AND DANGEROUS, WE HAVE A PROBLEM: IN THE VIRTUAL ABSENCE OF DIVERSITY WITHIN AND AMONG BLACK MALE CHARACTERS, THESE PHYSICAL ATTRIBUTES BECOME DEFINITIONAL TO BLACKNESS ITSELF.'

DON'T SHOOT!

OFTEN RACE IS DEPLOYED AS A SHORTHAND, TO ADD FLAVOUR TO OTHERWISE ONE-DIMENSIONAL CHARACTERS.

LIKE MUCH FANTASY BEFORE IT, **WORLD OF WARCRAFT** (2004) TAKES INSPIRATION FROM EXAGGERATED AND STEREOTYPED IMAGES OF REAL-WORLD HUMAN CULTURES TO CRAFT THE DIFFERENT RACES OF ITS RICHLY DETAILED FANTASY WORLD.

THUS WE HAVE THE NOBLE, NATIVE AMERICAN-STYLED TAUREN.

THE MYSTICAL ORIENTALIST PANDAREN.

AND THE JAMAICAN ACCENTED, VOODOO-PRACTISING TROLLS.

WHILE THIS SORT OF SHORTHAND HELPS CREATE THE RICH TAPESTRY OF CULTURES THAT GIVE THE GAME ITS DEPTH, AS SOCIOLOGIST **MELISSA MONSON** PUTS IT, 'SUCH CHARACTERIZATIONS COULD WELL HAVE BEEN RIPPED DIRECTLY FROM THE PAGES OF WESTERN COLONIAL HISTORY.'

GREETINGS, MON.

WITH ITS STRICT SEPARATION OF RACES, EACH WITH THEIR OWN INNATE ABILITIES AND TEMPERAMENTS, THE GAME TOYS DANGEROUSLY WITH **RACIAL ESSENTIALISM** — THE IDEA THAT YOUR NATURE IS A BIOLOGICAL RESULT OF YOUR RACE.

AND IN CASTING WHITE EUROPEAN CULTURE AS THE DEFAULT REPRESENTATION OF HUMANITY, AND NON-WHITE CULTURES AS LITERALLY NON-HUMAN, THE GAME REINFORCES **REGRESSIVE IDEAS** OF WHITE SUPERIORITY.

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OF COURSE, SOME GAMES HAVE MANAGED TO **CHALLENGE** RACIST AND ESSENTIALIST IMAGES OF NON-WHITE CHARACTERS — OFFERING NOT JUST BRUTISH HEROES OR VILLAINS, BUT COMPLEX, ROUNDED CHARACTERS.
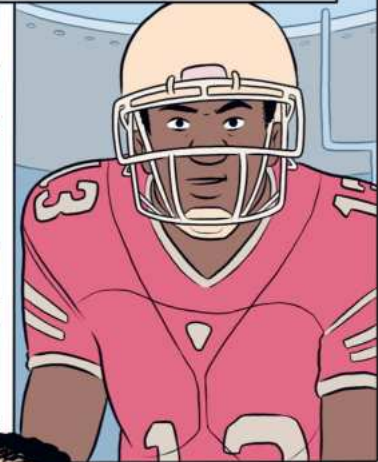
EARLY GAME DEVELOPER **MURIEL TRAMIS** WAS A FRENCH AFRICAN-CARIBBEAN ENGINEER WHO BECAME FASCINATED BY THE POTENTIAL OF VIDEO GAMES TO TELL NEW KINDS OF STORIES. HER GAME **FREEDOM: REBELS IN THE DARKNESS** (1988) EXPLORED THE HISTORY OF FRENCH SLAVERY, PUTTING THE PLAYER IN THE ROLE OF A REBELLING PLANTATION SLAVE.

AT THE TIME I MADE THE GAME, THESE STORIES WERE NOT KNOWN BECAUSE THEY WERE HIDDEN ... IT WAS MY DUTY TO REMEMBER.

THE WALKING DEAD (2012) PORTRAYS AFRICAN-AMERICAN COLLEGE PROFESSOR LEE EVERETT AS A NUANCED, ROUNDED INDIVIDUAL, WHOSE JOURNEY TO REDEMPTION HINGES NOT ON BRUTE FORCE BUT HIS ABILITY TO PROTECT AND RAISE CLEMENTINE, A YOUNG GIRL HE HAS RESCUED.

IT'S A CHARACTERIZATION THAT NOT ONLY COUNTERS VIDEO GAME REPRESENTATIONS OF BLACK MEN, BUT ALSO OF MEN IN GENERAL, OFFERING AN IMAGE OF EVERETT AS A COMPASSIONATE, FLAWED AND COMPLEX HUMAN BEING.

WHILE VIDEO GAMES OFTEN WORK TO REINFORCE CULTURAL CONCEPTIONS OF GENDER AND RACE, THEY HAVE ALSO CREATED A SPACE FOR US TO **PLAY WITH IDENTITY**.

VIDEO GAMES BRIM WITH POTENTIAL LIBERATION, OFFERING US WHAT THEORIST **ELIZABETH M. REID** DESCRIBES AS 'A MANIFESTATION OF THE SELF BEYOND THE REALMS OF THE PHYSICAL, EXISTING IN A SPACE WHERE IDENTITY IS SELF-DEFINED RATHER THAN PRE-ORDAINED'.

FOR SOME, THE TRANSFORMATIONS THAT VIDEO GAMES ALLOW CAN BE DEEPLY THERAPEUTIC, AND MANY TRANSGENDER AND NON-BINARY PLAYERS REPORT USING ROLE-PLAYING GAMES TO HELP BETTER UNDERSTAND THEIR IDENTITY.

AS JOURNALIST **LAURA KATE DALE** PUTS IT, VIDEO GAMES 'PROVIDE A PLACE IN WHICH IDENTITY CAN BE EXPLORED SAFELY. AND FOR ME, SOMEONE WHO THE WORLD VIEWED AS MALE, **WORLD OF WARCRAFT** PROVIDED A SPACE TO DISCOVER THAT I FELT MORE COMFORTABLE WHEN TREATED AS FEMALE.'
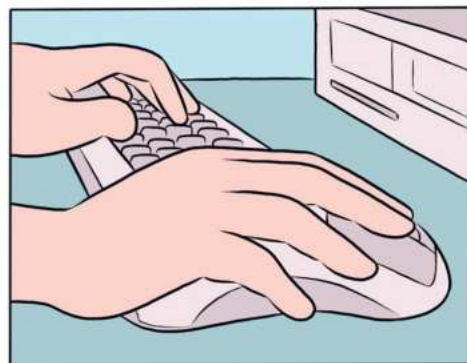
FOR SOME PEOPLE THIS SORT OF IDENTITY PLAY PRECEDES THE PERSONAL REALIZATION THAT THEY ARE TRANSGENDER. AS ONE REDDIT USER RECALLS:

TRUTH IS I DIDN'T REALLY KNOW WHY I DID IT. I DID KNOW THAT IT FELT GREAT WHEN PEOPLE USED FEMALE PRONOUNS FOR ME IN THESE GAMES ...

IT WAS THANKS TO THESE GAMES IN PART THAT I WAS FINALLY ABLE TO ADMIT TO MYSELF WHAT IT WAS THAT I WANTED.

FOR SOME THE TEMPORARILY EXTENDED BODY IMAGE THAT GAMES OFFER IS MORE THAN A POWER TRIP. IT'S A CHANCE TO INHABIT A BODY THAT FEELS MORE LIKE HOME.

FROM THE QUIET MOTHERLY PRIDE IN **LITTLE PARTY** (2015), TO THE SENSE OF LOSS AND LONGING IN **FIREWATCH** (2016), GAMES ARE AN INCREASINGLY POWERFUL TOOL FOR TAPPING INTO HUMAN EXPERIENCE AND EMOTION.
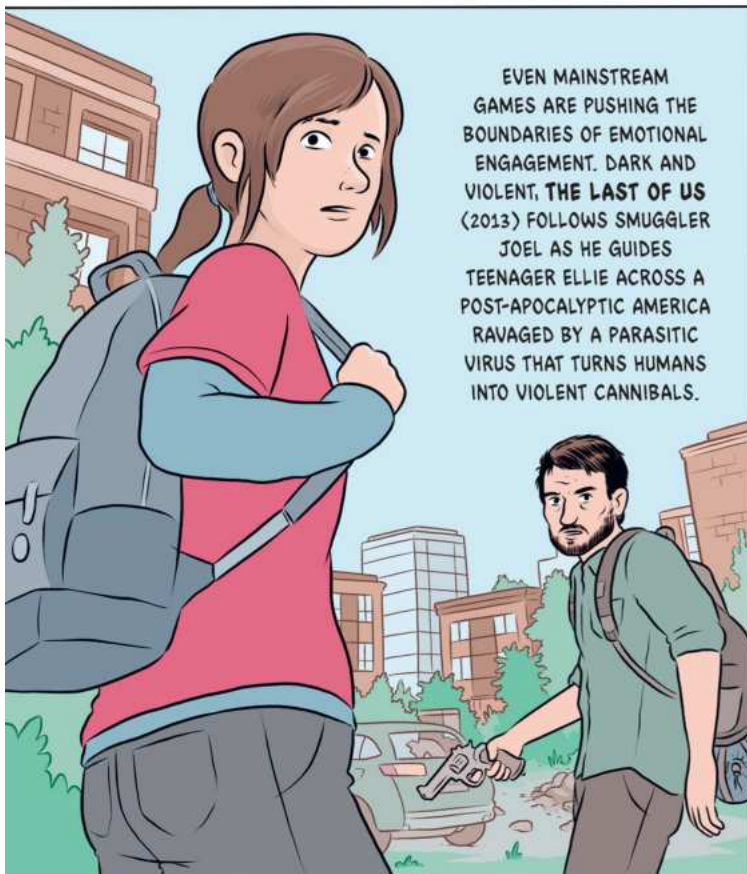
EVEN MAINSTREAM GAMES ARE PUSHING THE BOUNDARIES OF EMOTIONAL ENGAGEMENT. DARK AND VIOLENT, **THE LAST OF US** (2013) FOLLOWS SMUGGLER JOEL AS HE GUIDES TEENAGER ELLIE ACROSS A POST-APOCALYPTIC AMERICA RAVAGED BY A PARASITIC VIRUS THAT TURNS HUMANS INTO VIOLENT CANNIBALS.

AS WE PROGRESS THROUGH THE GAME WE GET TO KNOW ELLIE, HER HUMANITY SHINING THROUGH BETWEEN GRIM BOUTS OF COMBAT.

MAN, THIS IS KINDA SAD. ALL THIS MUSIC THAT'S JUST SITTING HERE. NO ONE'S AROUND TO LISTEN TO IT.

SHE CRACKS JOKES, HUMS GUITAR RIFFS AND SLOWLY, CLUMSILY LEARNS TO WHISTLE.

MORE THAN JUST A PROP FOR THE ACTION, ELLIE EMERGES AS A FULLY ROUNDED CHARACTER WITH A BELIEVABLE INTERNAL LIFE. OVER HOURS OF PLAY WE DEVELOP AN ATTACHMENT TO HER. A SENSE OF **RESPONSIBILITY**.

ALL THIS COMES TO A HEAD DURING ONE OF THE GAME'S MOST ICONIC AND RESONANT MOMENTS. IT'S SPRING, AND AS JOEL AND ELLIE DRAW EVER NEARER TO AN UNCERTAIN FATE, THEY DISCOVER A HERD OF GIRAFFES WALKING THROUGH THE STREETS OF SALT LAKE CITY.

QUIETLY, THE TWO PAUSE TO TAKE IN THE VIEW.

AFTER MONTHS OF HORROR FOR THE PAIR, IT'S A MOMENT OF HOPE AND BEAUTY.

IN ANOTHER MEDIUM, THIS WOULD BE AN INTERESTING AND EMOTIONAL SCENE OF CHARACTER DEVELOPMENT. BUT IN A VIDEO GAME IT BECOMES **SOMETHING ELSE.** ELLIE IS JUST A CHARACTER. A COLLECTION OF CODE. YET I FEEL A PERSONAL AND UNSHAKEABLE RESPONSIBILITY FOR HER.

I WAIT WITH HER, IN SILENCE, LONG PAST THE END OF THE SCENE.

JUST WATCHING. LETTING HER WATCH.

BECAUSE MOVING ON MEANS ENDING THIS MOMENT.

NOT FOR ME THE PLAYER ... BUT FOR HER.

PERHAPS THE MOST EMOTIONALLY AFFECTING GAMES ARE THOSE THAT TELL TRUE HUMAN STORIES.

RECENTLY, THE **DEMOCRATIZATION** OF GAME DESIGN HAS OPENED UP THE AUTOBIOGRAPHICAL POTENTIAL OF THE MEDIUM. GAMES LIKE **MATTIE BRICE**'S **MAINICHI** (2012) AND **ZOE QUINN**'S **DEPRESSION QUEST** (2013) LET PLAYERS LIVE OUT OTHER PEOPLE'S EXPERIENCES, IF ONLY FOR A MOMENT.

MAINICHI OFFERS A SLICE OF EVERYDAY LIFE FROM THE PERSPECTIVE OF A YOUNG TRANS WOMAN.

CAPTURED IN A CUTE ROLE-PLAYING GAME STYLE, THE GAME THROWS YOU INTO EVERYDAY EXPERIENCES TURNED SOUR BY THE WAY OTHER PEOPLE TREAT YOU.

RAW AND DREAMLIKE, **THAT DRAGON, CANCER** (2016) FOLLOWS A FAMILY AS THEY COME TO TERMS WITH THEIR INFANT SON'S TERMINAL CANCER.

IT'S A HEARTBREAKING EXPERIENCE. A GAME WITHOUT POWER-UPS OR EXTRA LIVES, WHERE NOTHING CAN BE DONE BUT TO TRY AND COMFORT BABY JOEL AS HE BURNS WITH FEVER AND PAIN.

IT'S A DARK, **DISEMPOWERING** MIRROR IMAGE OF THE POWER FANTASY THAT MAINSTREAM GAMING WAS FOUNDED ON. A GAME THAT WILL MOVE YOU TO TEARS, AND LEAVE YOU WITH A RAW SENSE OF GRIEF FOR A CHILD YOU HAVE NEVER MET.

GAMING'S AMAZING CAPACITY TO ALLOW US TO EXPLORE DIFFERENT EXPERIENCES, INHABIT DIFFERENT BODIES AND GROW EMOTIONALLY ATTACHED TO DIGITAL CHARACTERS HAS LED SOME TO DESCRIBE VIDEO GAMES, AND ESPECIALLY VIRTUAL REALITY, AS **EMPATHY MACHINES**.

BUT HOW FAR CAN EMPATHY TAKE US? **CLOUDS OVER SIDRA** (2015) IS A VIRTUAL REALITY DOCUMENTARY THAT PLACES VIEWERS IN THE MIDDLE OF DAY-TO-DAY LIFE IN ZAATARI REFUGEE CAMP IN JORDAN.

FOR MANY IT'S A DEEPLY AFFECTING EXPERIENCE, ALLOWING THEM TO BEAR WITNESS TO A PLIGHT FACING MILLIONS. AND STUDIES SHOW THAT IMMERSING OURSELVES IN ANOTHER PERSON'S STORY INCREASES OUR EMPATHY TOWARDS THEM.

BUT FOR GAME DESIGNER **ROBERT YANG**, PROJECTS LIKE **CLOUDS OVER SIDRA** OFFER LITTLE MORE THAN **HIGH-TECH DISASTER TOURISM** THAT EXPLOITS THE MISFORTUNE OF OTHERS TO OFFER AFFLUENT WESTERNERS 'THE ILLUSION OF EMPATHY'.
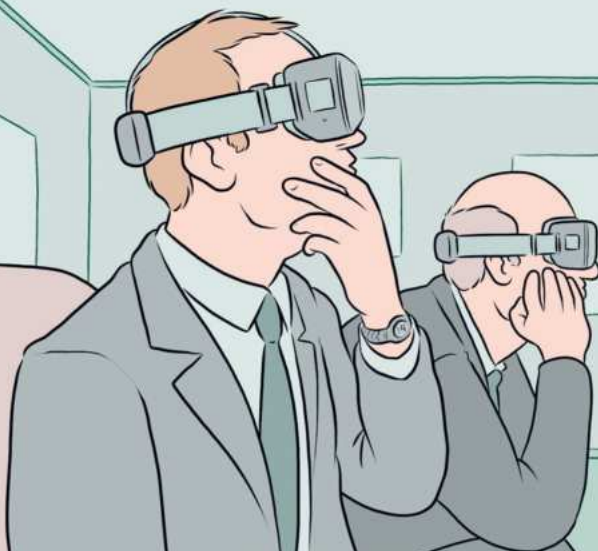
IF YOU WON'T BELIEVE SOMEONE'S PAIN UNLESS THEY WRAP AN EXPENSIVE 360° VIDEO AROUND YOU, THEN PERHAPS YOU DON'T ACTUALLY CARE ABOUT THEIR PAIN ...

I DON'T WANT YOUR EMPATHY, I WANT JUSTICE!

67

IN THE ARCADES OF THE 1980s, CYBERPUNK AUTHOR **WILLIAM GIBSON** WITNESSED HUMAN INTERACTIONS WITH COMPUTERS THAT WOULD HELP INSPIRE HIS SEMINAL NOVEL **NEUROMANCER** (1984).
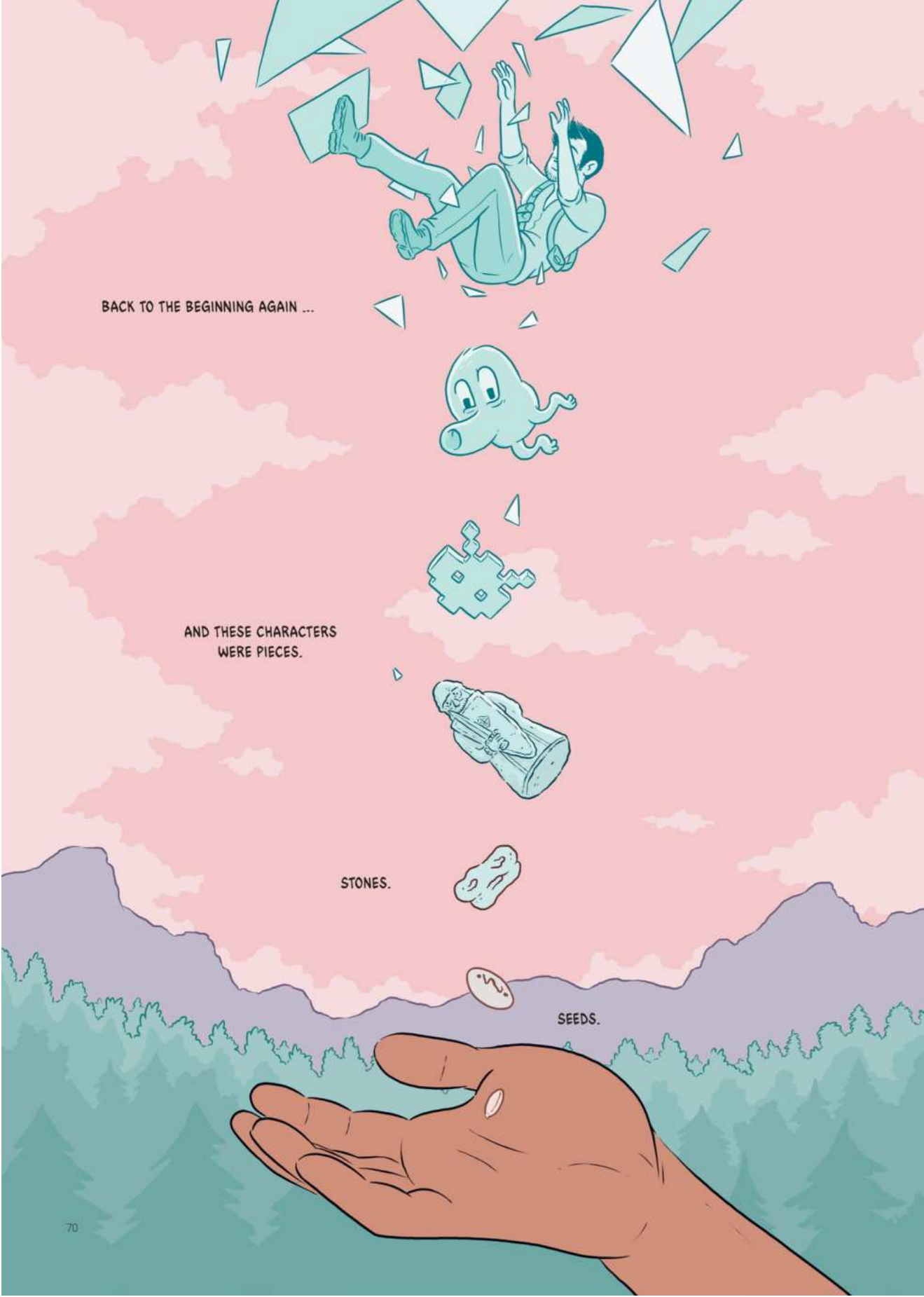
'I COULD SEE IN THE PHYSICAL INTENSITY OF THEIR POSTURES HOW RAPT THESE KIDS WERE ... YOU HAD THIS FEEDBACK LOOP, WITH PHOTONS COMING OFF THE SCREEN INTO THE KIDS' EYES, THE NEURONS MOVING THROUGH THEIR BODIES, ELECTRONS MOVING THROUGH THE COMPUTER.'

HERE WERE PEOPLE NOT JUST **PLAYING** GAMES, BUT BECOMING **AT ONE WITH THEM.** TO GIBSON, A FUTURE BECKONED WHERE IDENTITY BLURRED AND COMPUTERS ALLOWED US TO TRANSFORM OURSELVES AT WHIM.
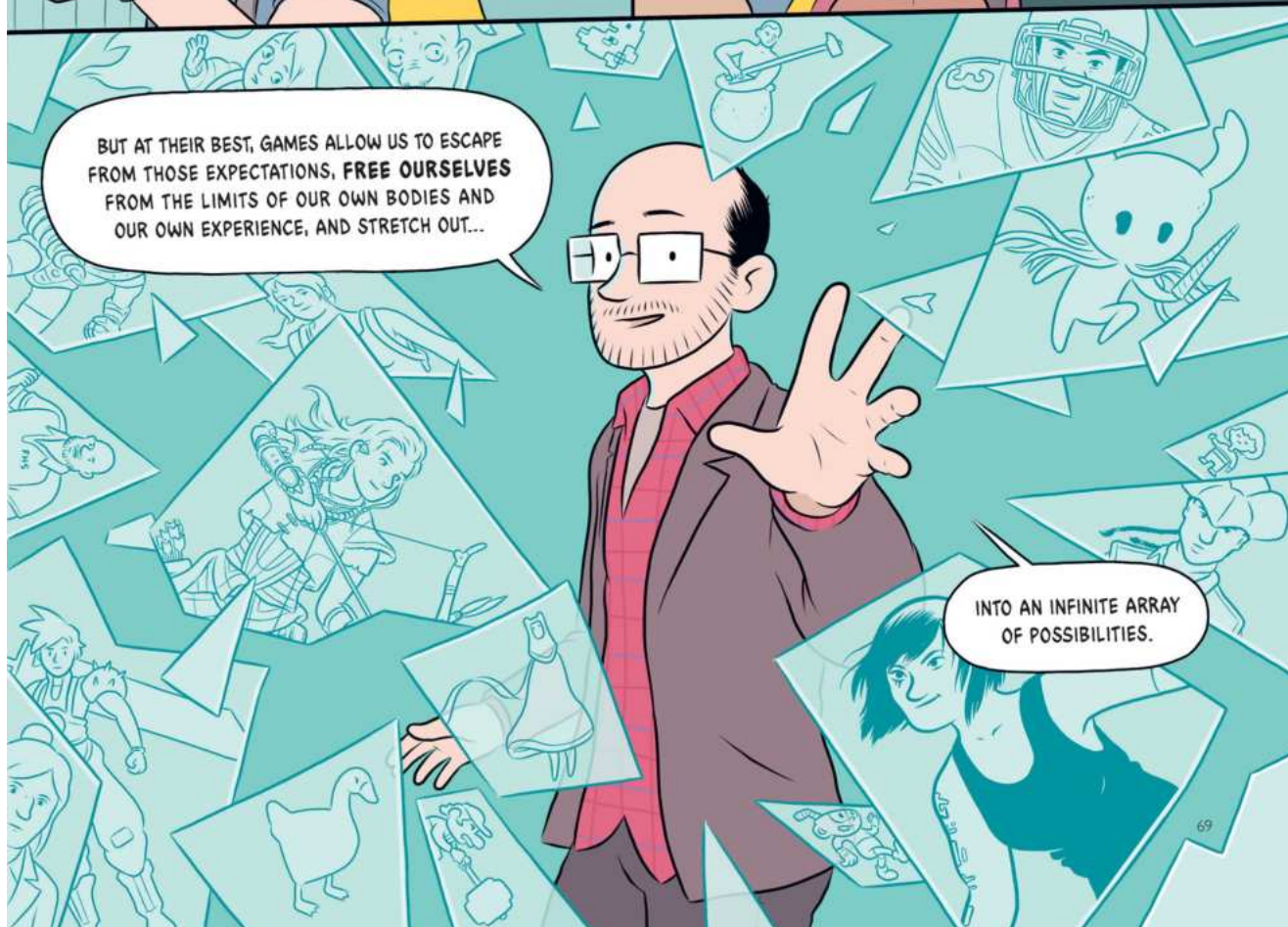
IN MANY WAYS, SINCE THEN VIDEO GAMES HAVE DELIVERED ON THAT PROMISE, MOVING BEYOND THE SIMPLE ABSTRACTION OF THE ARCADES TOWARDS NEW IMMERSIVE AND EMOTIONAL POSSIBILITIES.

AT THEIR WORST, GAMES ARE CAPABLE OF REINFORCING EXPECTATIONS AND STEREOTYPES ABOUT RACE, GENDER, SEXUALITY OR DISABILITY.

BUT AT THEIR BEST, GAMES ALLOW US TO ESCAPE FROM THOSE EXPECTATIONS, **FREE OURSELVES** FROM THE LIMITS OF OUR OWN BODIES AND OUR OWN EXPERIENCE, AND STRETCH OUT...

INTO AN INFINITE ARRAY OF POSSIBILITIES.

BACK TO THE BEGINNING AGAIN ...

AND THESE CHARACTERS
WERE PIECES.

STONES.

SEEDS.

BUT ALL
PLAYING
PIECES NEED
A BOARD.
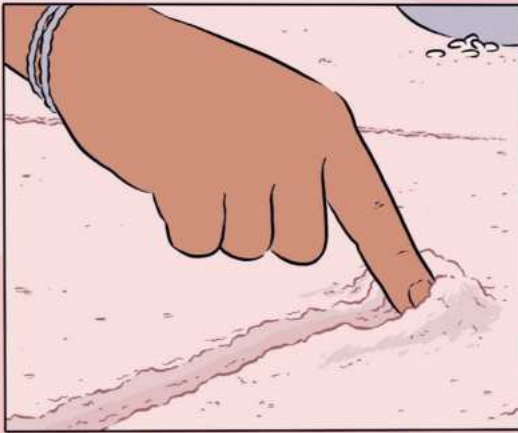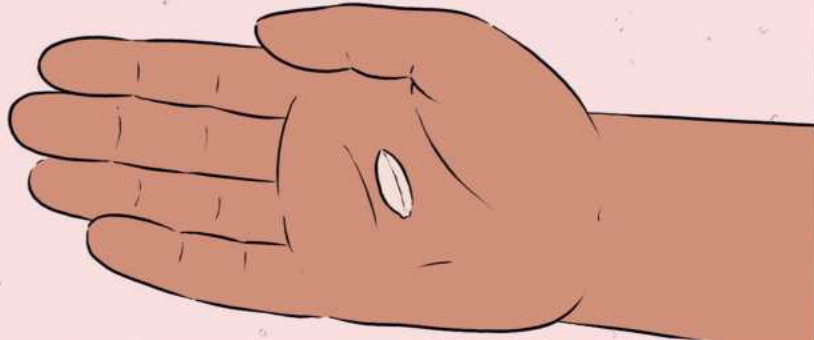
AND ALL GAMES NEED A
SPACE TO BE PLAYED.

FROM A GAME OF **MANCALA** OR HIDE-AND-SEEK, TO A SPORTING EVENT OR THEATRICAL PERFORMANCE, PLAY OF ALL KINDS REQUIRES A DEFINED SPACE TO COME TO LIFE.

AS CULTURAL HISTORIAN **JOHAN HUIZINGA** PUTS IT, 'PLAY IS NOT "ORDINARY" OR "REAL" LIFE. IT IS RATHER A STEPPING OUT OF "REAL" LIFE INTO A TEMPORARY SPHERE OF ACTIVITY WITH A DISPOSITION OF ITS OWN.'

AND THIS 'TEMPORARY SPHERE' — OFTEN REFERRED TO AS THE **MAGIC CIRCLE** — CAN TAKE ON MANY FORMS: FROM THE BOARD AND THE ARENA TO THE SANDPIT AND THE STAGE.

IN ALL PLAY, THERE IS A LINE BETWEEN THE GAME AND THE REAL WORLD. WHEN WE STEP INTO THAT SPACE, AND AGREE TO PLAY BY ITS RULES, THE GAME BEGINS.

AND WHEN SOMETHING COMPROMISES THE PLAYSPACE, IT UPSETS US. WHEN THE PITCH IS INVADED, WHEN OUR COMPETITOR CHEATS, WHEN THE VIDEO GAME CRASHES, WE JOLT BACK TO REALITY IN FRUSTRATION.

IT'S NO SURPRISE, THEN, THAT GAMES OF ALL KINDS DEMONSTRATE A FUNDAMENTAL FASCINATION WITH SPACE AND MOVEMENT.

THE EARLIEST BOARD GAMES REPLICATED RACES AND JOURNEYS.

CHESS PRESENTED A BATTLEFIELD.

GYAN CHAUPAR AN ASCENT.

MONOPOLY A CITYSCAPE.

VIDEO GAMES ARE JUST AS ENTHRALLED. FROM PLATFORMERS TO SHOOTERS, TRUCKING SIMULATORS TO STRATEGY GAMES, TIME AND AGAIN VIDEO GAMES FOCUS ON THE EXPLORATION, MASTERY OR TRAVERSAL OF CONTESTED SPACE.

EVEN ABSTRACT PUZZLE GAMES LIKE **TETRIS** (1984) AND **CANDY CRUSH SAGA** (2012) FOCUS ON MOVEMENT AND SPATIAL RELATIONSHIPS, SATISFYING OUR DESIRE FOR ORDER AMIDST CHAOS.

THIS FASCINATION WITH SPACE AND MOVEMENT HAS BEEN WITH VIDEO GAMES SINCE THE BEGINNING, WHEN **SPACEWAR!** TRANSPORTED US BEYOND OUR TERRESTRIAL HOME TO SOMEWHERE FAR MORE THRILLING AND DANGEROUS.

BUT THE EARLIEST GAMES WERE CONFINED TO THE LIMITS OF THE SCREEN, ECHOING THE TIGHT BOUNDS OF A GAME BOARD OR SPORTS PITCH.

FOR SOME, IT SIMPLY WASN'T GOOD ENOUGH. THEY WANTED TO ESCAPE THE LIMITS OF THE SCREEN. TO BREAK OUT. TO **EXPLORE**.

73

CAMBRIDGE, MASSACHUSETTS. 1975.

MIT GRADUATE **WILL CROWTHER** IS REELING FROM DIVORCE.

LONELY AND ISOLATED FROM HIS TWO DAUGHTERS, HE LONGS TO FIND A WAY TO CONNECT WITH THEM.

AND WHAT BETTER WAY, THAN WITH A STORY?

AN EXPERIENCED CAVER, AND AN AVID **DUNGEONS & DRAGONS** PLAYER, CROWTHER BEGINS WORK ON CREATING AN INTERACTIVE WORLD THAT WILL UNITE THESE TWO PASSIONS, AND THRILL HIS KIDS.

THIS WON'T BE A NOISY, BLOCKY SPECTACLE LIKE THE VIDEO GAMES CHUGGING DOWN QUARTERS IN THE ARCADE.

ADVENTURE WILL BE SOMETHING DIFFERENT.

UNLIKE ANYTHING AROUND.

A GAME TOLD THROUGH TEXT, AND CONTROLLED THOUGH TEXT.

YOU ARE IN A MAZE OF TWISTY LITTLE PASSAGES, ALL ALIKE.

>_

BROUGHT TO LIFE THROUGH THE POWER OF THE HUMAN IMAGINATION.

YO
TW
ALL ALIKE

> GO NORTH_

THE GAME WOULDN'T REMAIN A GIFT FROM FATHER TO DAUGHTERS FOR LONG.

LIKE **SPACEWAR!** BEFORE IT, **ADVENTURE** QUICKLY TOOK ON A LIFE OF ITS OWN.

ARPA NETWORK

SPREADING ACROSS THE COUNTRY VIA THE ARPANET, A PRECURSOR TO THE INTERNET, IT HOOKED EVERYONE WHO PLAYED IT.

ITS SUCCESS SHOCKED CROWTHER. BUT PERHAPS IT SHOULDN'T HAVE.

UNLIKE **SPACEWAR!**, UNLIKE THE ARCADES, THIS GAME DIDN'T EXPLOIT OUR LUST FOR FLOW AND FIERO. **ADVENTURE** SERVED A DEEPER, MORE EMOTIONAL NEED.
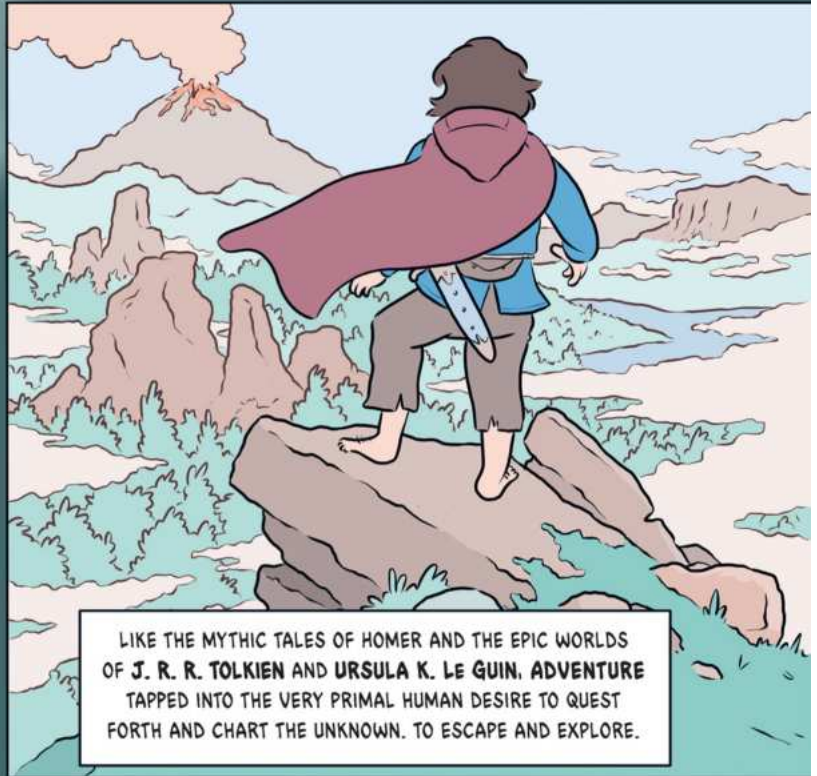
LIKE THE MYTHIC TALES OF HOMER AND THE EPIC WORLDS OF **J. R. R. TOLKIEN** AND **URSULA K. LE GUIN**, **ADVENTURE** TAPPED INTO THE VERY PRIMAL HUMAN DESIRE TO QUEST FORTH AND CHART THE UNKNOWN. TO ESCAPE AND EXPLORE.

YOU ARE IN A SPLENDID CHAMBER THIRTY FEET HIGH. THE WALLS ARE FROZEN RIVERS OF ORANGE STONE.
>_

IT MAY HAVE ONLY COME TO LIFE IN THE MIND, BUT **ADVENTURE** WAS THE FIRST EPIC VIDEO GAME ENVIRONMENT, AND A SIGN OF WHAT WAS TO COME.

75

FEW HAVE CAPTURED THE MAGIC OF DISCOVERY AS WELL AS **SHIGERU MIYAMOTO**.

A CREATIVE AND INQUISITIVE CHILD, YOUNG SHIGERU WOULD SPEND HIS DAYS EXPLORING THE JAPANESE COUNTRYSIDE NEAR HIS RURAL HOME.

IT WAS A WORLD OF MYSTERY AND AWE, WHERE NEW SURPRISES LAY AROUND EVERY CORNER.

A YOUNG BOY, ALONE WITH HIS IMAGINATION.

A TINY ADVENTURER IN A BIG, DANGEROUS WORLD.

WITH **THE LEGEND OF ZELDA** (1986) THE ADULT MIYAMOTO SOUGHT TO RECAPTURE THESE EXPERIENCES. TO BOTTLE THIS SENSE OF WONDER FOR OTHERS TO ENJOY.
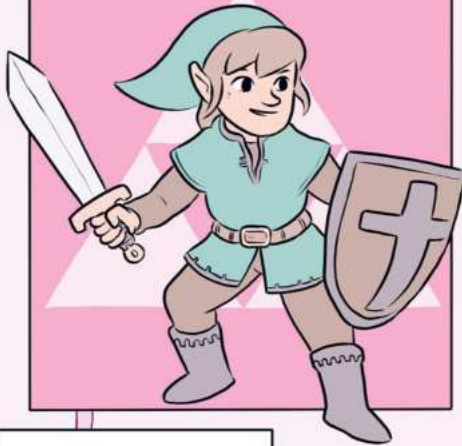
PART OF CAPTURING THIS MAGIC WAS IN MAKING A WORLD **WORTHY** OF DISCOVERY.
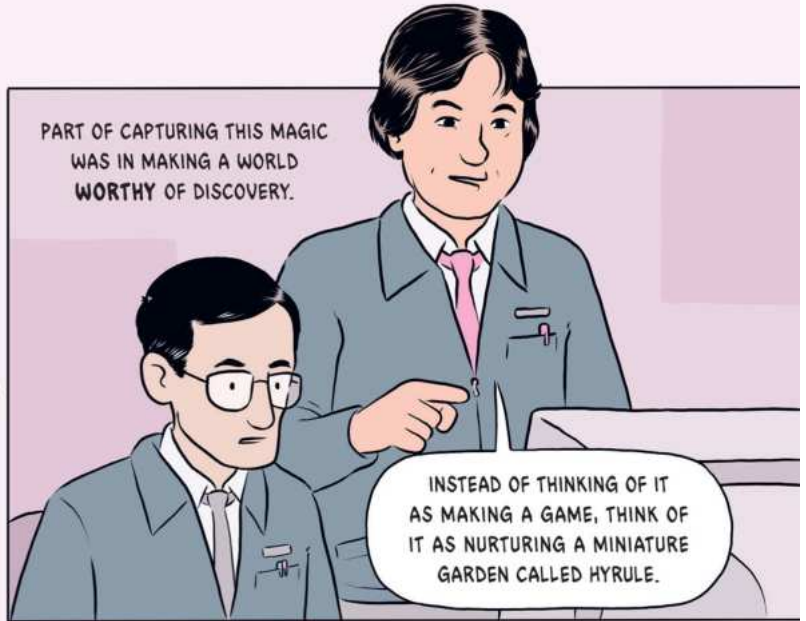
INSTEAD OF THINKING OF IT AS MAKING A GAME, THINK OF IT AS NURTURING A MINIATURE GARDEN CALLED HYRULE.

THE MINIATURE GARDEN IS AN IDEA AT THE HEART OF MIYAMOTO'S DESIGN PHILOSOPHY — A CONCEPT WITH ROOTS IN THE DECORATIVE GARDENS OF JAPANESE CULTURE, KNOWN AS **HAKONIWA.**

AS GAME DESIGNER **CHAIM GINGOLD** EXPLAINS: 'GARDENS ARE DYNAMIC LIVING SYSTEMS, FULL OF SECRETS, AUTONOMOUS AGENTS, TRANSFORMATION, AND EMERGENT BEHAVIOURS. A GARDEN HAS AN INNER LIFE ALL ITS OWN. IT IS A WORLD WHICH GOES ON WITHOUT YOU.'

IN THIS IDEA, MIYAMOTO FOUND THE PERFECT MODEL FOR HIS GAME WORLDS. THIS WOULDN'T BE ABOUT CREATING ENORMOUS REPLICAS OF THE REAL WORLD, BUT FANCIFUL MICROCOSMS.
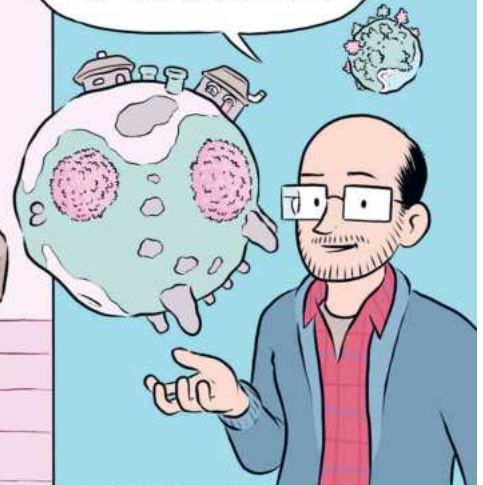
WORLDS BRIMMING WITH SECRETS AND MYSTERY, WHERE OUR CURIOSITY AND SENSE OF ADVENTURE WAS REWARDED.

MYTHICAL LANDS THAT CAME TO LIFE AT THE FLICK OF A SWITCH.

FROM LINK'S **HYRULE** TO MARIO'S **MUSHROOM KINGDOM**, THE WORLDS THAT MIYAMOTO CREATED WERE MORE THAN A BACKDROP...

THEY WERE WORLDS OF WONDER THAT RESPONDED PLAYFULLY TO OUR PRESENCE THERE. AS ICONIC AS THE CHARACTERS THAT EXPLORED THEM.

A LAND LIKE HYRULE COULDN'T HAVE COME AT A MORE IMPORTANT TIME.

The Legend of ZELDA

AS GAMES HISTORIAN **TRISTAN DONOVAN** ARGUES, 'FOR A GENERATION OF AMERICAN AND JAPANESE CHILDREN WHOSE FREEDOM TO WANDER, EXPLORE AND PLAY OUTSIDE WAS BEING CURTAILED BY URBANIZATION, IT WAS A VIRTUAL SUBSTITUTE.'

FUN, EXUBERANT AND FINELY TUNED, MIYAMOTO'S MAGICAL WORLDS HELPED SET A NEW STANDARD FOR THE MEDIUM AND ENSURED NINTENDO'S MARKET DOMINANCE FOR YEARS TO COME.

AND AS THE MAGIC AND MYSTERY OF NATURE GAVE WAY TO CONDOS AND PARKING LOTS, VIDEO GAMES LIKE MIYAMOTO'S TOOK ON AN EVER MORE IMPORTANT ROLE IN THE MYTH-MAKING OF CHILDHOOD.

POSTCARDS

Welcome To WASTELAND

Greetings from RAPTURE

Greetings from HYRULE

GREETINGS from SILENT HILL

Greetings from CITY 17

Welcome To ALTISSIA

Greetings from NORRATH

Wish you were here... THE REACH

Greetings from MYST

IN THE YEARS SINCE MIYAMOTO BROUGHT HIS ICONIC WORLDS TO LIFE, OUR INTEREST IN VIRTUAL PLACES HAS ONLY INCREASED.

AS WRITER **SIMON PARKIN** STATES, 'THERE'S A UNIQUE SENSE OF AWE TO BEING A TOURIST IN A PLACE THAT'S SIMULTANEOUSLY VIVID AND VIRTUAL.'

FREE FROM THE RULES OF REALITY, VIDEO GAMES CAN TRANSPORT US TO FANTASY LANDS AND IMPOSSIBLE PLACES, IMMERSING US IN WORLDS FAR FROM OUR CURRENT COORDINATES.

GAMES LIKE **THE OREGON TRAIL** (1971) AND THE **ASSASSIN'S CREED** SERIES OFFER RICHLY DETAILED HISTORICAL WORLDS THAT BEG TO BE EXPLORED.

OTHERS, LIKE **AMERICAN McGEE'S ALICE** (2000) AND ESCHER-INSPIRED **MONUMENT VALLEY** (2014), SURROUND US WITH PHYSICALLY IMPOSSIBLE ARCHITECTURE THAT SHIFTS AND TURNS BENEATH OUR VIRTUAL FEET.

TODAY, WITH EVERY INCH OF OUR PLANET MAPPED, PHOTOGRAPHED AND AVAILABLE TO VIEW AT A MOMENT'S NOTICE, VIDEO GAMES RECONNECT US WITH THE JOY OF DISCOVERY AND EXPLORATION.

IN VIRTUAL WORLDS WE BECOME CARTOGRAPHERS, PIONEERS, SETTING OFF TOWARDS THE HORIZON TO BE THE FIRST TO SEE WHAT IS BEYOND.

THE DESIGNERS OF **NO MAN'S SKY** (2016) SET OUT TO CREATE A GALAXY OF INFINITE POSSIBILITY, PRODUCING AN ALGORITHMICALLY GENERATED UNIVERSE FOR PLAYERS TO EXPLORE.

THE RESULT WAS VIRTUALLY LIMITLESS SPACE, A GALAXY SO LARGE IT WOULD TAKE A PLAYER **5 BILLION YEARS** TO VISIT EVERY ONE OF ITS **18 QUINTILLION** PLANETS.

INSTEAD OF SCOPE, **EVERYTHING** (2017) DEALS WITH SCALE, OFFERING A WEIRD AND WONDERFUL TOY BOX OF TRANSFORMATION THAT ALLOWS PLAYERS TO BECOME ANYTHING FROM A SINGLE HYDROGEN ATOM, TO A BIRD GLIDING THROUGH THE SKY, TO A GALAXY SPIRALLING THROUGH SPACE.

IT'S A POETIC PIECE OF DESIGN THAT WORKS TO CREATE A PLAYFUL SENSE OF AWE IN THE PLAYER — A SENSATION OF BEING A PART OF SOMETHING BIGGER THAN ONESELF.

FROM THE HAUNTED HALLS OF **CASTLEVANIA** (1986) TO THE CRUMBLING UNDERSEA DYSTOPIA OF **BIOSHOCK** (2007), HORROR GAMES HAVE HARNESSED THE EVOCATIVE QUALITIES OF SETTING TO POWERFUL EFFECT.

IN **RESIDENT EVIL** (1996) A POLICE RESCUE TEAM MUST SURVIVE A ZOMBIE ONSLAUGHT IN AN ABANDONED MANSION.

IT'S A BUILDING RICH WITH CHARACTER: A CLAUSTROPHOBIC LABYRINTH OF NARROW CORRIDORS WHERE DANGER CAN SPRING FROM ANY CORNER, AND LOCKED DOORS BLOCK OUR PROGRESS AND RETREAT.

LAYERS OF FEAR (2016) SEES YOU EXPLORING A PAINTING STUDIO, TRYING TO WORK OUT HOW TO COMPLETE YOUR MASTERPIECE.

AS THE GAME PROGRESSES, YOUR SANITY FALTERS. ROOMS CHANGE BEHIND YOUR BACK, CORRIDORS TWIST AND REPEAT ENDLESSLY, AND GHOSTLY APPARITIONS FLICKER IN AND OUT OF EXISTENCE.

IN THESE GAMES THE HORROR COMES NOT JUST FROM THE ENEMIES BUT FROM THE SHIFTING, UNSTABLE ENVIRONMENTS PLAYERS FIND THEMSELVES TRAPPED IN.

Welcome to Silent Hill

SPACES OPERATING NOT ACCORDING TO EARTHLY PHYSICS, BUT THE LAWS OF **NIGHTMARES**.

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OTHERS HAVE TURNED TO MORE RECOGNIZABLE SETTINGS TO INSPIRE TERROR. THE COOPERATIVE ZOMBIE SURVIVAL SERIES **LEFT 4 DEAD** SEES PLAYERS MAKING THEIR WAY THROUGH CITY STREETS, SUBURBAN HOMES, HOSPITALS AND SHOPPING MALLS AS THEY ATTEMPT TO ESCAPE THE UNDEAD.

IN THIS WORLD, EVERY UPTURNED TRUCK AND BURNED-OUT BUILDING, EVERY QUARANTINED HOSPITAL WARD AND BOARDED-UP FARMHOUSE TELLS A STORY AND BRINGS THIS APOCALYPTIC WORLD VIVIDLY TO LIFE.

IT'S A WONDERFUL EXAMPLE OF WHAT THEORIST **HENRY JENKINS** CALLS **EMBEDDED NARRATIVE** — A STORY THAT IS TOLD NOT JUST THROUGH CHARACTER INTERACTIONS OR PLOT, BUT THROUGH THE SETTING ITSELF.

IT'S A HUGELY POWERFUL TYPE OF STORYTELLING, DEPLOYED IN EVERYTHING FROM THE POST-APOCALYPTIC AMERICANA OF **FALLOUT** (1997) TO THE WHALEPUNK CITY OF **DISHONORED** (2012) TO ADD DEPTH AND DETAIL TO DIGITAL WORLDS.

IN RECENT YEARS, AS INDEPENDENT DEVELOPERS HAVE FOUGHT TO EXPAND THE STORYTELLING POTENTIAL OF VIDEO GAMES, **EMBEDDED NARRATIVE** HAS BECOME EVEN MORE IMPORTANT.

IN **GONE HOME** (2013), THE PLAYER RETURNS TO THE FAMILY HOME TO FIND IT MYSTERIOUSLY DESERTED.

BRATMOBILE COOL SCHMOOL A

STORM WATCH
SEVERE WEATHER WARNING
STAND BY

WHAT EMERGES IS NOT THE MURDER MYSTERY THAT THE GAME'S INITIAL TENSION HINTS AT, BUT AN INTIMATE AND DEEPLY AFFECTING EXPLORATION OF A FAMILY'S INNER LIFE.

TO DO:

EXPLORING THE HOUSE, WE RIFLE THROUGH DRAWERS, PULL NOTES FROM THE FRIDGE DOOR AND LEAF THROUGH DIARIES AS WE UNCOVER THE MYSTERY OF OUR MISSING FAMILY.
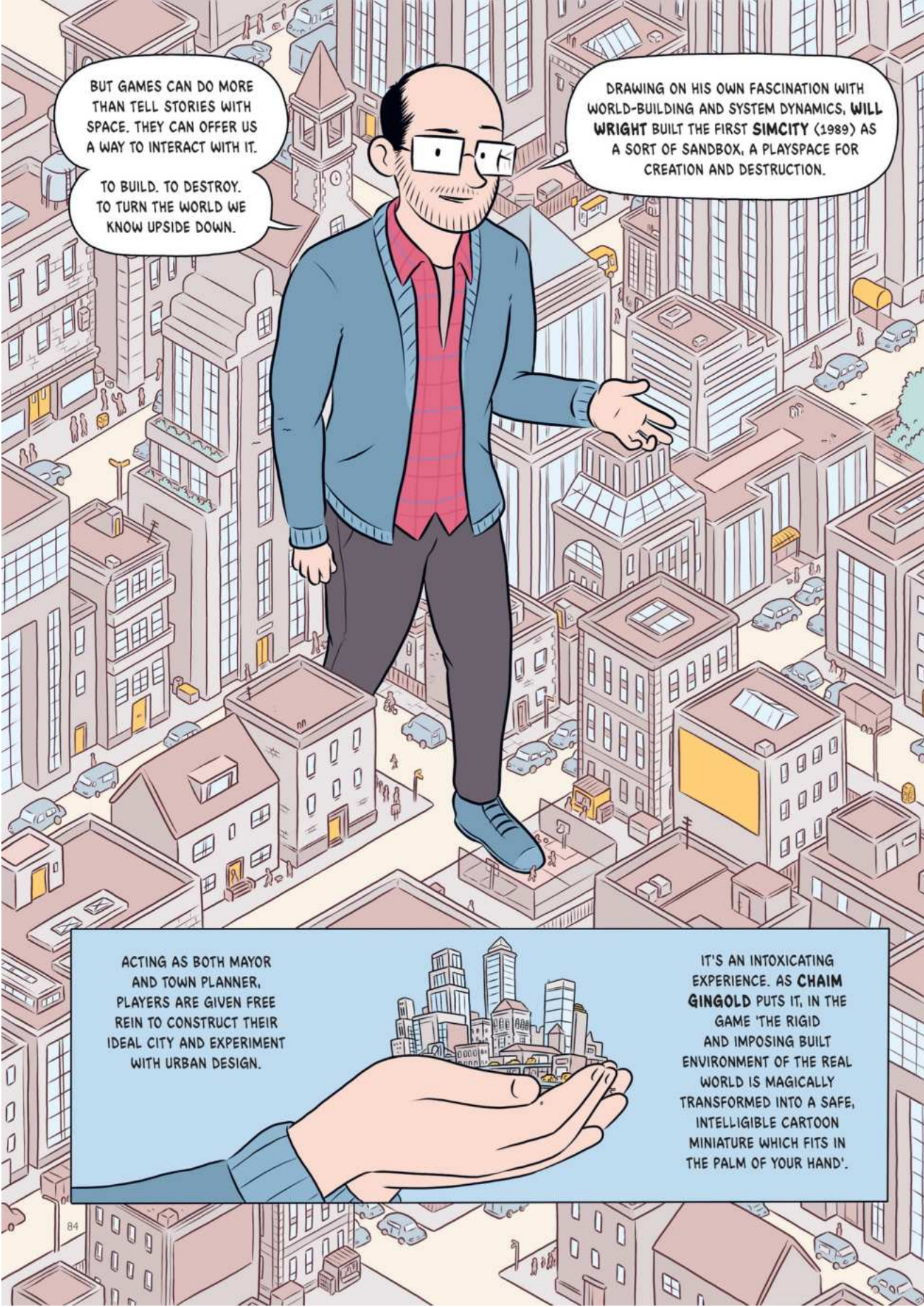
AS CRITIC **LEIGH ALEXANDER** WRITES, 'THE GAME'S SETTING UNDERLINES HOW MUCH OF OURSELVES IT'S POSSIBLE TO INVEST INTO PLACES AND THINGS.'

EMPTY OF ALL BUT THE INTERLOPING PLAYER, THIS DOMESTIC SPACE IS ONE HAUNTED BY THE MEMORIES OF THOSE WHO LIVE IN IT.

ENTAL
IOR

GIRLSCOUT SETLIST

CALL DANIEL BACK!

Model
ority
Squeeze
ng Stories
Instruction
First Mate
Self

THE SLITS

IT'S A GHOST STORY WITHOUT ANY GHOSTS. A TALE TOLD THROUGH THE ORDINARY ITEMS OUR LIVES COLLECT, AND THE WORDS WRITTEN DOWN ALONG THE WAY.

BUT GAMES CAN DO MORE THAN TELL STORIES WITH SPACE. THEY CAN OFFER US A WAY TO INTERACT WITH IT.

TO BUILD. TO DESTROY. TO TURN THE WORLD WE KNOW UPSIDE DOWN.

DRAWING ON HIS OWN FASCINATION WITH WORLD-BUILDING AND SYSTEM DYNAMICS, **WILL WRIGHT** BUILT THE FIRST **SIMCITY** (1989) AS A SORT OF SANDBOX, A PLAYSPACE FOR CREATION AND DESTRUCTION.

ACTING AS BOTH MAYOR AND TOWN PLANNER, PLAYERS ARE GIVEN FREE REIN TO CONSTRUCT THEIR IDEAL CITY AND EXPERIMENT WITH URBAN DESIGN.

IT'S AN INTOXICATING EXPERIENCE. AS **CHAIM GINGOLD** PUTS IT, IN THE GAME 'THE RIGID AND IMPOSING BUILT ENVIRONMENT OF THE REAL WORLD IS MAGICALLY TRANSFORMED INTO A SAFE, INTELLIGIBLE CARTOON MINIATURE WHICH FITS IN THE PALM OF YOUR HAND'.

'SIMCITY... HAS PROBABLY INTRODUCED MORE PEOPLE TO URBAN PLANNING THAN ANY BOOK EVER HAS' SOCIOLOGIST **PAUL STARR** HAS RIGHTLY ARGUED.

THE GAME HAS ALLOWED PEOPLE NORMALLY SEPARATED FROM THE LEVERS OF POWER TO GET TO GRIPS WITH THE INVISIBLE MECHANISMS THAT DETERMINE WHETHER CITIES THRIVE OR FALTER.

BUT, WHILE THE GAME MAY HAVE BEEN CONCEIVED BY WRIGHT AS A 'TOY', ITS SIMULATIONS ARE NOT NECESSARILY NEUTRAL.

THE GAME SELLS US A TECHNOCRATIC VISION THAT THE COMPLEX DYNAMICS OF LIVING CITIES CAN BE REDUCED TO A SIMULATION. THAT PEOPLE'S LIVES AND WELLBEING CAN BE REDUCED TO MERE NUMBERS AND CODE.

USED TO EDUCATE IN SCHOOLS AND EVEN UNIVERSITIES, AND WITH URBAN PLANNERS RAISED ON **SIMCITY** NOW INCREASINGLY RELIANT ON PROGRAMS THAT BEAR A STRIKING SIMILARITY TO THE GAME, THIS TECHNOCRATIC FANTASY MAY START SEEPING OUT INTO REALITY.

FLOATING GOD-LIKE ABOVE THE CITY, MODERN URBAN PLANNERS RISK LOSING SIGHT OF THE PEOPLE THEIR DECISIONS INEVITABLY IMPACT.

REAL-WORLD CITIES BECOMING JUST ANOTHER VIRTUAL SPACE TO BE TWEAKED AND PLAYED WITH.

PERHAPS NO OTHER GAME HAS EMBRACED OUR FASCINATION WITH CREATION AND DESTRUCTION AS BEAUTIFULLY AS **MINECRAFT** (2009).

IN THE GAME, PLAYERS EMERGE INTO A WORLD OF BLOCKS — A PROCEDURALLY GENERATED LANDSCAPE WHERE THE ONLY IMPERATIVE IS TO SURVIVE.

TO DO THIS, THEY GET TO WORK MINING RESOURCES, CRAFTING THEM INTO USEFUL TOOLS AND NEW BUILDING MATERIALS, AND CONSTRUCTING A SHELTER TO SURVIVE THE NIGHT.

ACCORDING TO **SIMON PARKIN**, 'MINECRAFT IS A GAME THAT ENABLES HUMANS TO EXPERIENCE AN ACCELERATED OR DISTILLED FORM OF HUMAN LIFE... A GAME ABOUT RETURNING TO NATURE, TO THE BASICS OF SURVIVAL AND PERSEVERANCE.'
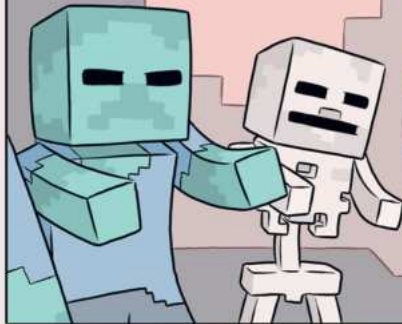
MORE THAN JUST A BLOCKY SURVIVAL SIMULATION, **MINECRAFT** TAPS INTO SOMETHING FUNDAMENTAL ABOUT HUMAN NATURE, GIVING US ACCESS TO THE CONDITIONS THAT FIRST DROVE HUMANS TO CREATE.

AS DAWN BREAKS, WE SET FORTH TO EXPLORE, TO PLAY, AND TEST LIMITS.

INTENT ON BUILDING SOMETHING BIGGER THAN OURSELVES.

WHATEVER THAT MAY BE.

FROM PLAYERS WORKING TOGETHER TO RE-CREATE ANCIENT WONDERS, TO SYRIAN REFUGEES USING THE GAME TO BUILD HOPE FOR THE FUTURE BY CRAFTING A DREAM HOME, THE **CREATIVITY** THE GAME HAS UNLEASHED HAS BEEN TRULY STAGGERING.
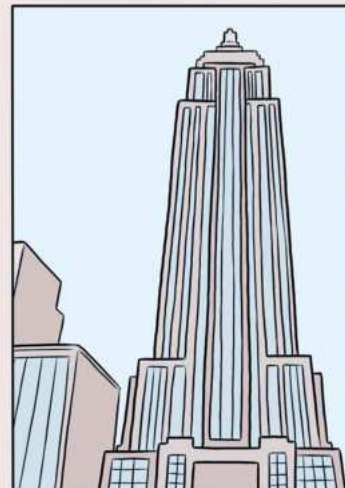
MINECRAFT TAPS INTO A FUNDAMENTAL HUMAN NEED. IT GIVES US, LIKE KIDS PLAYING IN A SANDBOX, THE TOOLS AND SPACE TO CREATE AND DESTROY, TO WORK TOGETHER, AND TO UNLEASH AN IMAGINATION NORMALLY TEMPERED BY REALITY.

THE POWERS OF CREATION AND DESTRUCTION EVIDENCED IN **SIMCITY** AND **MINECRAFT** ARE AN ALLURING FANTASY. BUT OUR REAL LIFE INTERACTIONS WITH ARCHITECTURE CAN BE FAR MORE OPPRESSIVE.

sous les Pavés, la plage

TO THE **SITUATIONIST** MOVEMENT IN THE 1960s, THE BUILT WORLD WAS RESPONSIBLE FOR ENFORCING THE SUBJUGATION AND MISERY PRESENT IN MODERN LIFE. ARCHITECTURE WAS AT THE HEART OF SOCIAL CONTROL AND POWER.

ALL SPACE IS OCCUPIED BY THE ENEMY.

WE ARE LIVING UNDER A PERMANENT CURFEW. NOT JUST THE COPS — THE **GEOMETRY**.

PRIVATE PROPERTY

IT'S A THEME THAT EMERGES TIME AND AGAIN IN GAMES, BROUGHT TO LIFE IN THE AUTOCRATIC CITIES OF **BENEATH A STEEL SKY** (1994) AND **HALF-LIFE 2** (2004) OR THE SURVEILLANCE STATE PORTRAYED IN **ORWELL** (2016).

WE SEE IT IN REAL LIFE TOO: IN THE SURVEILLANCE DEVICES THAT MONITOR EVERY STREET CORNER, THE CANALIZATION OF OUR BODIES THROUGH THE CITY, AND THE **HOSTILE ARCHITECTURE** DESIGNED TO DRIVE AWAY HOMELESS PEOPLE.

NO ROUGH SLEEPING

FAR FROM BEING PLACES OF OPPORTUNITY AND FREE CHOICE, CITIES ARE BECOMING SPACES TO BE ANXIOUSLY NAVIGATED, WHERE FREEDOM IS HELD IN CHECK BY CONCRETE AND STEEL.

BUT PERHAPS, IN THEIR OWN SMALL WAY, GAMES CAN FREE US FROM THIS.

GRAND THEFT AUTO V (2013) PRESENTS PLAYERS WITH LOS SANTOS, A CORRUPT AND HYPERREAL REIMAGINING OF LOS ANGELES, TEEMING WITH LIFE AND POSSIBILITY.

WHILE THE SERIES HAS BEEN ATTACKED FOR ITS CYNICISM AND VIOLENCE, ON A FUNDAMENTAL LEVEL **GRAND THEFT AUTO V** AND ITS FOREBEARS ARE GAMES DESIGNED AS PLAYGROUNDS: SPACES MEANT TO FOSTER FUN AND SUBVERSIVE INTERACTIONS WITH THE CITY.

WITH EVERY CAR EASILY STOLEN, A NEAR-INFINITE SUPPLY OF MONEY, BULLETS AND EXPLOSIVES, AND A BODY THAT BOUNCES BACK FROM DEATH AFTER A QUICK TRIP TO THE HOSPITAL, **GRAND THEFT AUTO** CLEARLY DOESN'T TRADE IN REALISM.

VINEWOO

INSTEAD IT WORKS TO FREE THE PLAYER FROM THE NORMAL RULES THAT GOVERN OUR INTERACTIONS WITH THE CITY ...

TURNING THE URBAN ENVIRONMENT OF A 21ST-CENTURY CITY INTO A PLAYGROUND OF ANARCHY AND DESTRUCTION.

POLICE

RATHER THAN TRADING IN DESTRUCTION, STEALTH GAMES LIKE **SABOTEUR** (1985) AND **METAL GEAR SOLID** (1998) GIVE PLAYERS THE TOOLS TO OVERCOME THE BUILT WORLD'S OPPRESSIVE GEOMETRIES.

TENSE AND EXHILARATING, THE **HITMAN** SERIES SEES AGENT 47 TASKED WITH THE ASSASSINATION OF VARIOUS TARGETS IN A SERIES OF EXOTIC LOCATIONS AROUND THE GLOBE.

FROM RUSTIC ITALIAN VILLAGES TO BUSY MUMBAI STREETS, EACH LEVEL IN THE GAME IS A BEAUTIFULLY REALIZED LOCATION — A CLOCKWORK DEATH MACHINE BRIMMING WITH MACABRE OPPORTUNITIES TO DISPATCH YOUR TARGETS.

EXPLOSIVE GOLF BALL.

POISON.

CANNON.

FALLING CHANDELIER.

BUT THE GAME'S REAL PLEASURES EMERGE AS YOU ATTEMPT TO GAIN ACCESS TO YOUR WEALTHY AND CORRUPT TARGETS, TUCKED AWAY IN PRIVATE VILLAS, EMBASSIES AND EXCLUSIVE PARTIES.

FROM THE PUBLIC SPACES OF THE CITY, YOU LOOK FOR YOUR WAY IN ...
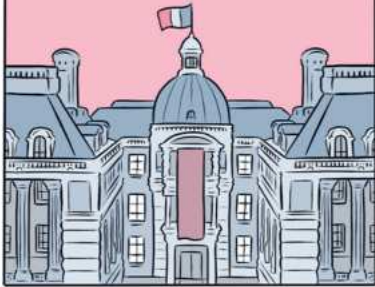
SOON YOU ARE JUMPING WALLS, PICKING LOCKS AND DONNING DISGUISES.

TRANSGRESSING ALL THE RULES THAT MAINTAIN ORDER IN THE BUILT WORLD.

DRESSED AS A CLEANER, A CHEF, A BODYGUARD, YOU TRESPASS IN PLAIN SIGHT, EDGING EVER CLOSER TO YOUR TARGET, SLIPPING BETWEEN TERRITORIES BOTH PUBLIC AND PRIVATE WITH EASE.
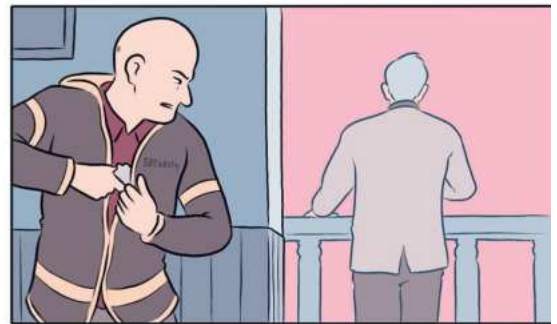
THE BUILT WORLD NO LONGER BARS YOUR ENTRY. IT NO LONGER CONSTRAINS AND CHANNELS YOU.

IT BECOMES YOUR PLAYGROUND.
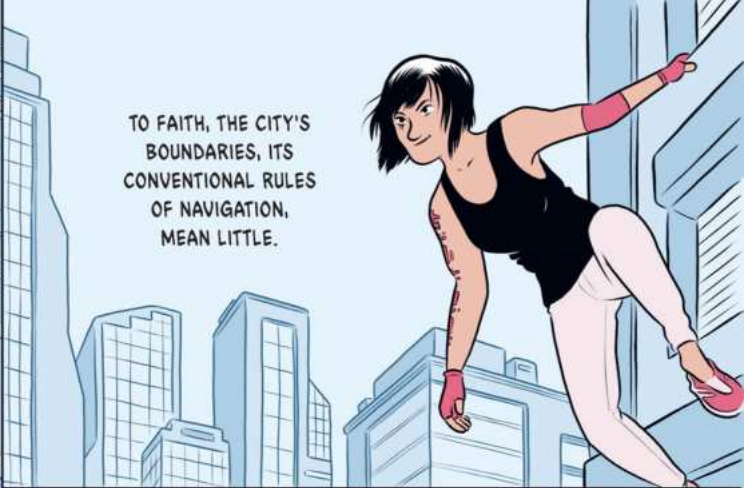
YOUR TOOL.

YOUR MURDEROUS MACHINE.

THIS THEME OF SUBVERSIVE MOVEMENT CONTINUES IN **MIRROR'S EDGE** (2008). SET IN A VAST AUTHORITARIAN METROPOLIS OF CLEAN WHITE SKYSCRAPERS, THE GAME SEES ITS HERO FAITH FIGHTING TO BRING DOWN THE REGIME.

TO FAITH, THE CITY'S BOUNDARIES, ITS CONVENTIONAL RULES OF NAVIGATION, MEAN LITTLE.

AS SHE EVADES THE LAW SHE CROSSES THE CITY IN EVERY WAY WE DREAM WE COULD: TRAVERSING ROOFTOPS, LEAPING BETWEEN BUILDINGS AND CRASHING UNWELCOME THROUGH OFFICES, AIR DUCTS AND PARKING GARAGES.

IT'S AN EXHILARATING EXPERIENCE.

FREE FROM THE RULES OF OUR CURRENT REALITY, **MIRROR'S EDGE** GIVES US THE CHANCE TO MOVE UNIMPEDED BY THE BARRIERS THAT NORMALLY DEFINE OUR DAY-TO-DAY MOVEMENT THROUGH THE CITY.

IN PLAYING, WE LEARN TO SEE THE BUILT WORLD NOT AS A BARRIER TO FREE MOVEMENT BUT A PLAYGROUND OF POTENTIAL ...

WHERE FORBIDDEN SPACES CRY OUT TO BE EXPLORED.
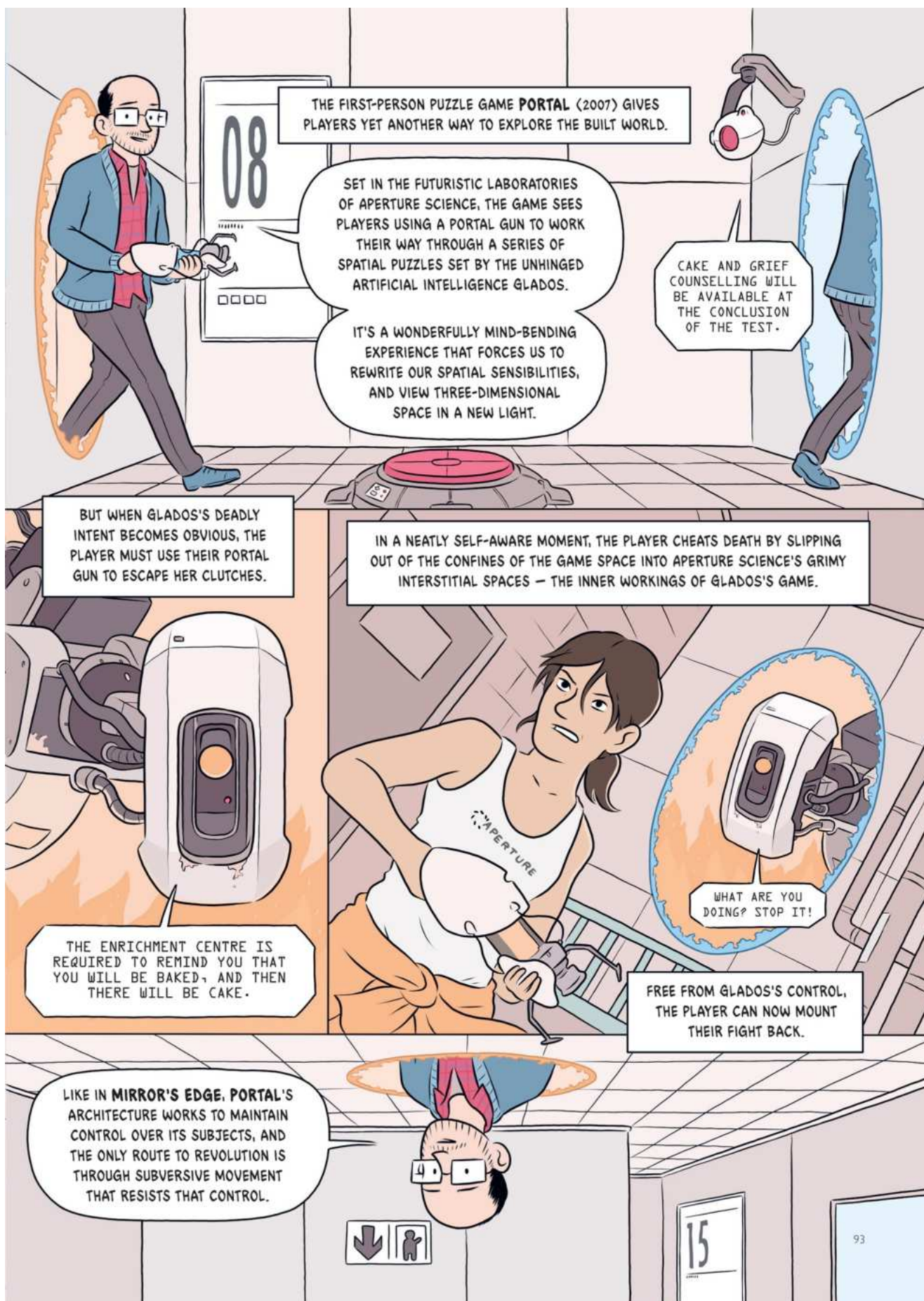
THE FIRST-PERSON PUZZLE GAME **PORTAL** (2007) GIVES PLAYERS YET ANOTHER WAY TO EXPLORE THE BUILT WORLD.

SET IN THE FUTURISTIC LABORATORIES OF APERTURE SCIENCE, THE GAME SEES PLAYERS USING A PORTAL GUN TO WORK THEIR WAY THROUGH A SERIES OF SPATIAL PUZZLES SET BY THE UNHINGED ARTIFICIAL INTELLIGENCE GLADOS.

IT'S A WONDERFULLY MIND-BENDING EXPERIENCE THAT FORCES US TO REWRITE OUR SPATIAL SENSIBILITIES, AND VIEW THREE-DIMENSIONAL SPACE IN A NEW LIGHT.

CAKE AND GRIEF COUNSELLING WILL BE AVAILABLE AT THE CONCLUSION OF THE TEST.

BUT WHEN GLADOS'S DEADLY INTENT BECOMES OBVIOUS, THE PLAYER MUST USE THEIR PORTAL GUN TO ESCAPE HER CLUTCHES.

IN A NEATLY SELF-AWARE MOMENT, THE PLAYER CHEATS DEATH BY SLIPPING OUT OF THE CONFINES OF THE GAME SPACE INTO APERTURE SCIENCE'S GRIMY INTERSTITIAL SPACES — THE INNER WORKINGS OF GLADOS'S GAME.

THE ENRICHMENT CENTRE IS REQUIRED TO REMIND YOU THAT YOU WILL BE BAKED, AND THEN THERE WILL BE CAKE.

WHAT ARE YOU DOING? STOP IT!

FREE FROM GLADOS'S CONTROL, THE PLAYER CAN NOW MOUNT THEIR FIGHT BACK.

LIKE IN **MIRROR'S EDGE**, **PORTAL**'S ARCHITECTURE WORKS TO MAINTAIN CONTROL OVER ITS SUBJECTS, AND THE ONLY ROUTE TO REVOLUTION IS THROUGH SUBVERSIVE MOVEMENT THAT RESISTS THAT CONTROL.

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GAMES LIKE **MIRROR'S EDGE** AND **PORTAL** ARE DESIGNED TO ENCOURAGE SUBVERSIVE MOVEMENT, PRESENTING A SPACE WHERE SUCH ACTIONS ARE SANCTIONED AND FACILITATED BY THE GAME.
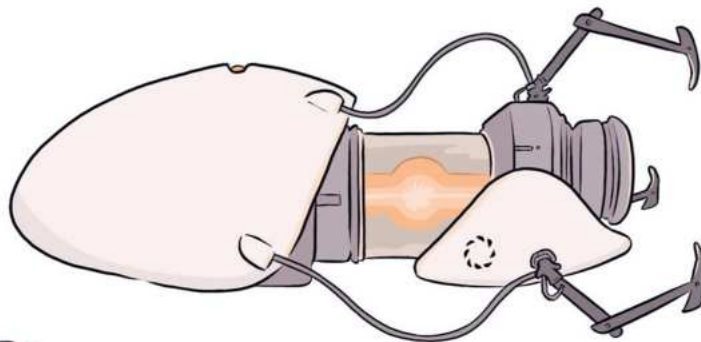
BUT WHO SAID WE HAD TO PLAY BY THE GAME'S RULES?

FOR **SPEEDRUNNERS**, THE ORIGINAL GOAL OF A GAME IS THROWN OUT OF THE WINDOW IN FAVOUR OF A NEW ONE: TO REACH THE GAME'S END IN THE FASTEST TIME POSSIBLE.

TO DO THIS, SPEEDRUNNERS USE WHAT CRITIC **DANIELLE RIENDEAU** DESCRIBES AS 'MATRIX-LIKE MANIPULATION' ...

FINDING GLITCHES AND BREAKS WITHIN THE GAME'S SYSTEMS TO DISCOVER SHORTCUTS NEVER PLANNED FOR OR INTENDED BY THE GAME'S ARCHITECTS.

BREAKING OUT OF THE GAME'S NARRATIVE BOUNDARIES, SPEEDRUNNERS SLIP INTO THE ABSTRACT SPACES THAT EXIST BEYOND THE BOUNDS OF THE PLAYSPACE.

SPACES WHERE THE LAWS OF PHYSICS CEASE TO FUNCTION AS EXPECTED, WHERE GEOMETRIES SHIFT AND BUCKLE.

UNLIKE IN **MIRROR'S EDGE** OR **PORTAL**, SPEEDRUNNERS REBEL NOT AGAINST THE GAME'S FICTIONAL AUTHORITIES, BUT THE AUTHORITY OF THE GAME ITSELF.

PRACTISING WHAT **QUAKE** SPEEDRUNNER **ANTHONY BAILEY** CALLS 'EXPERIMENTAL PHYSICS IN A WHOLE NEW UNIVERSE'.

IN OUR DAY-TO-DAY LIVES, OUR INTERACTIONS WITH THE WORLD AROUND US ARE HEAVILY POLICED. BUT IN PLAY EVERYTHING CHANGES.

THE PLAYGROUND BECOMES A HUNTING GROUND. PAVEMENTS BECOME FRAUGHT WITH IMAGINARY DANGER AS THE CRACKS THREATEN TO BREAK YOUR BACK.

AND FROM THE SOFA, HOT LAVA OR DEADLY SHARKS AWAIT A MISPLACED FOOT.

THIS SPIRIT IS ALIVE AND WELL IN ADULT PLAY TOO. **PARKOUR** REIMAGINES THE CITY AS A SERIES OF OBSTACLES TO BE PLAYFULLY AND SUBVERSIVELY NAVIGATED.

AND GAMES LIKE **PAC-MANHATTAN** RIP VIDEO GAMES OUT OF THE ARCADE MACHINE AND INTO THE REAL WORLD, TURNING THE URBAN ENVIRONMENT OF NEW YORK CITY INTO AN IMMERSIVE, REAL-WORLD **PAC-MAN** MAP, WHERE COSTUMED PLAYERS TEAR AFTER EACH OTHER THROUGH BUSTLING CITY STREETS.

VIDEO GAMES MEANWHILE FREE US FROM THE CONFINING POWER OF REAL-WORLD ARCHITECTURE. OF PHYSICS ITSELF.

THE PLAY THEY OFFER IS UNBRIDLED. THEY TURN VIRTUAL CITIES INTO PLAYGROUNDS, PUT THE POWER OF CREATION IN OUR HANDS AND GIVE US ACCESS TO WORLDS BEYOND OUR IMAGINATION.

INCREASINGLY, WE FIND VIRTUAL SPACES ENTERING MEMORY WITH ALL THE **FAMILIARITY** OF A CHILDHOOD HOME.

Welcome to
YAUGHTON

Please drive carefully

FEW WHO HAVE PLAYED THEM CAN FORGET THE FEELING OF WALKING THROUGH THE HAUNTING PASTORAL LANDSCAPES OF **EVERYBODY'S GONE TO THE RAPTURE** (2015)

THE SPIRITUAL DESERTS OF **JOURNEY** (2012)

THE GRIMY NEON FUTURESCAPES OF **CYBERPUNK 2077** (2020).

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1972. REYKJAVIK.
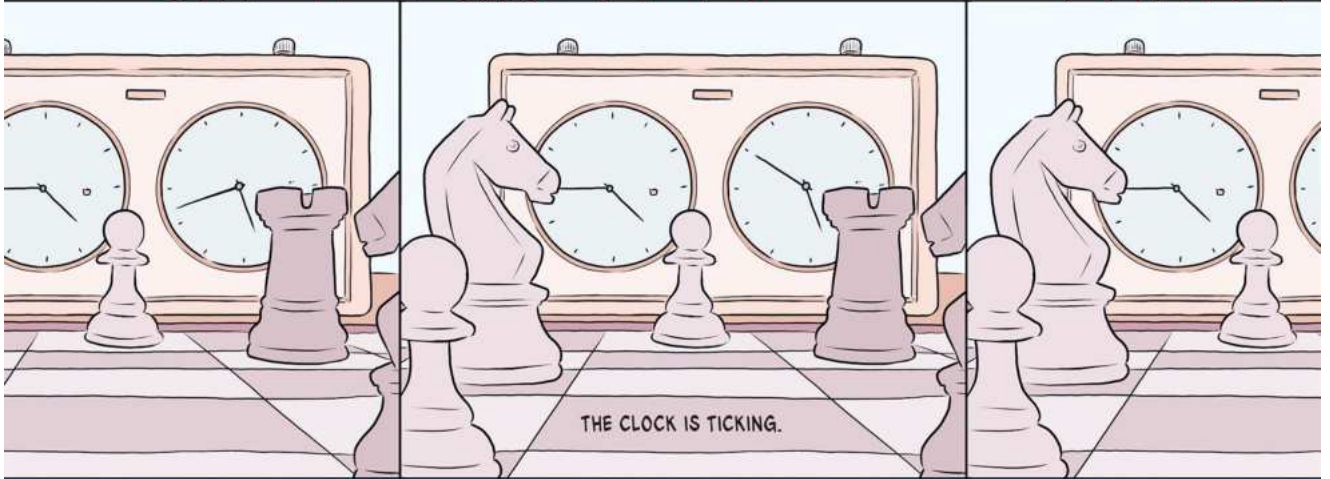
THE CLOCK IS TICKING.

SOVIET GRANDMASTER **BORIS SPASSKY**
WATCHES AS AMERICAN **CHESS** CHAMPION
BOBBY FISCHER COMPUTES HIS OPTIONS.

THE WORLD WATCHES.
IT'S A COLD WAR
BATTLE PLAYED OUT
ON A **CHESS** BOARD.

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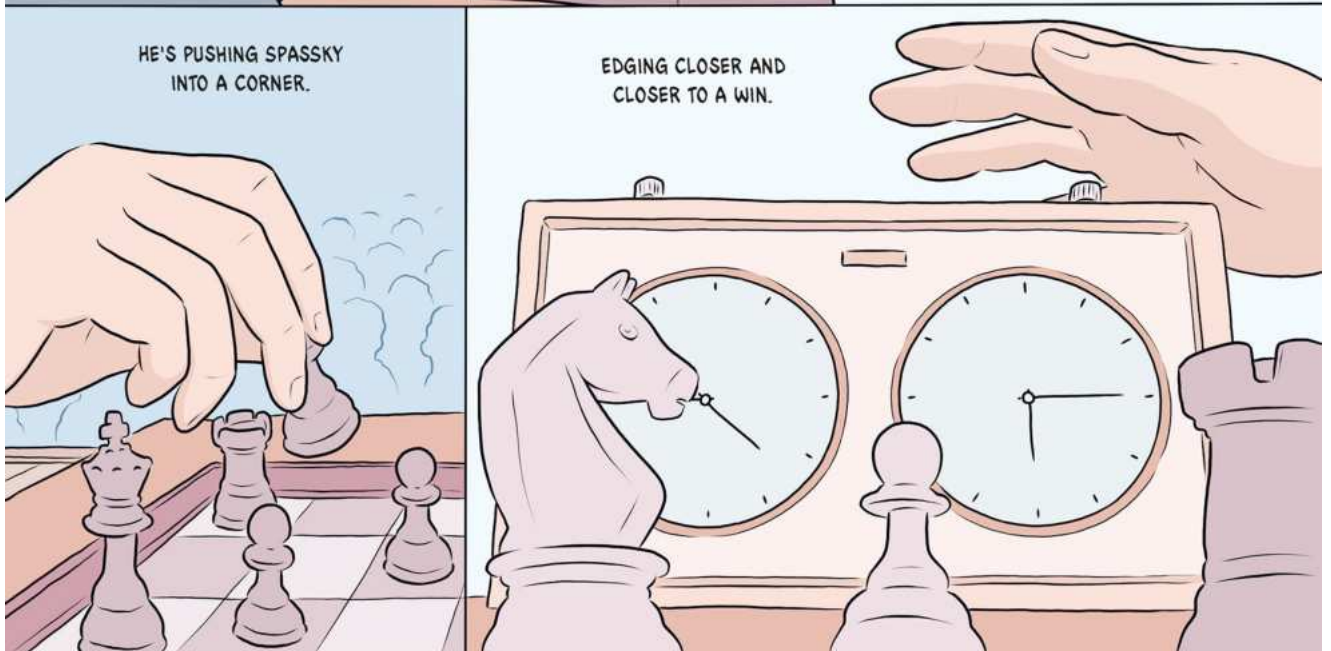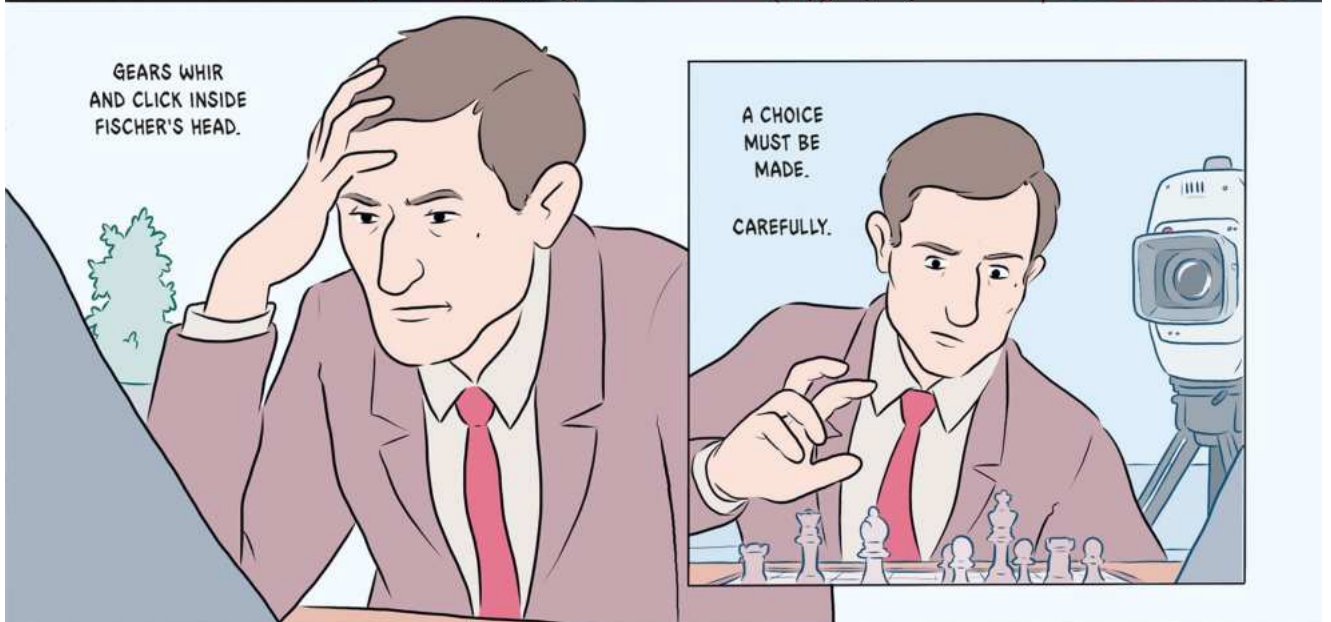
FROM A CHILDHOOD GAME OF HIDE-AND-SEEK OR A FAST-PACED ROUND OF **PONG**, TO A WORLD CHAMPIONSHIP **CHESS** MATCH, CHOICE IS AT THE HEART OF ALL GAMES.

IT MAY NOT HAVE SEEMED SO AT FIRST. FOR THE LONGEST STRETCH OF HUMAN HISTORY, OUR LIVES WERE LIVED AT THE MERCY OF THE FATES.
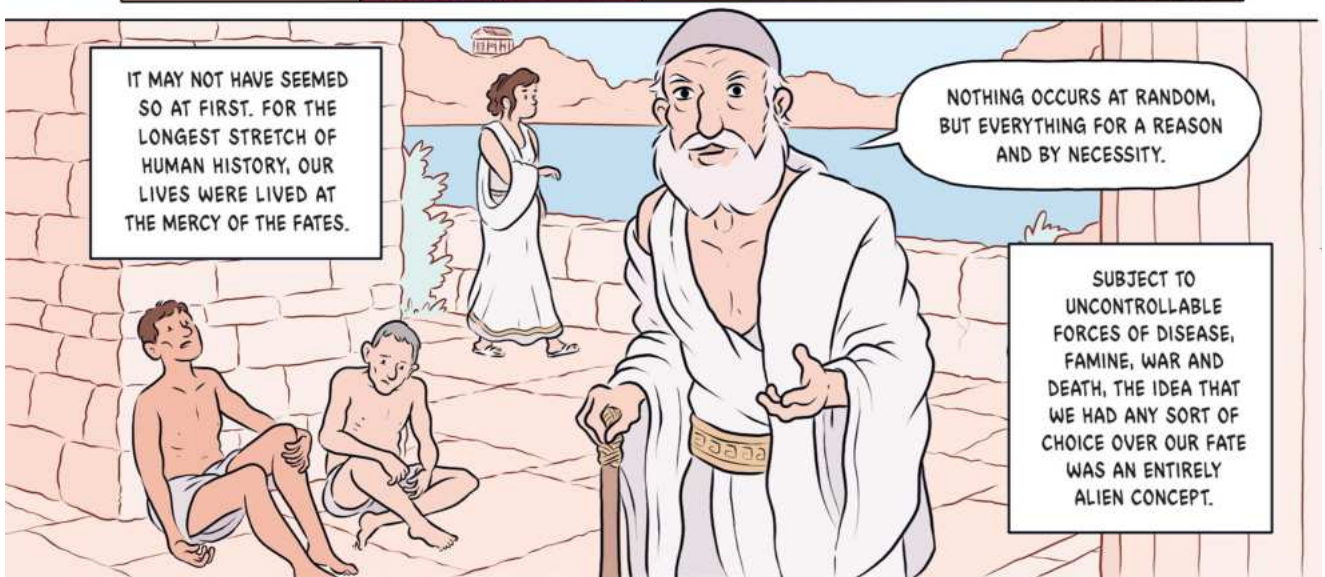
NOTHING OCCURS AT RANDOM, BUT EVERYTHING FOR A REASON AND BY NECESSITY.

SUBJECT TO UNCONTROLLABLE FORCES OF DISEASE, FAMINE, WAR AND DEATH, THE IDEA THAT WE HAD ANY SORT OF CHOICE OVER OUR FATE WAS AN ENTIRELY ALIEN CONCEPT.

THE VERY EARLIEST GAME PIECES REFLECTED THIS HARSH REALITY. **ASTRAGALI** WERE KNUCKLEBONE DICE USED FOR CASTING LOTS — TELLING FORTUNES IN OUR ALREADY PREDETERMINED LIVES.

EMERGING FROM RELIGIOUS CEREMONIES, THESE DICE TOOK ON THE ROLE OF PLAYING PIECES, DECIDING OUR FATES IN GAMES LIKE **PATOLLI** AND **GYAN CHAUPAR**.

FEEDING OUR DEEPLY ROOTED FASCINATION WITH FATE, GAMES OF CHANCE ALLOWED US TO REHEARSE FOR THE UNPREDICTABILITY OF OUR DAILY LIVES.

AS GAMES EVOLVED, CHOICE BECAME A MORE AND MORE IMPORTANT FEATURE. FROM THE 50-50 OUTCOME OF A COIN-TOSS AND THE ONE-IN-SIX ODDS OF A DICE ROLL, GAMES OF INCREASING COMPLEXITY BEGAN TO EMERGE.
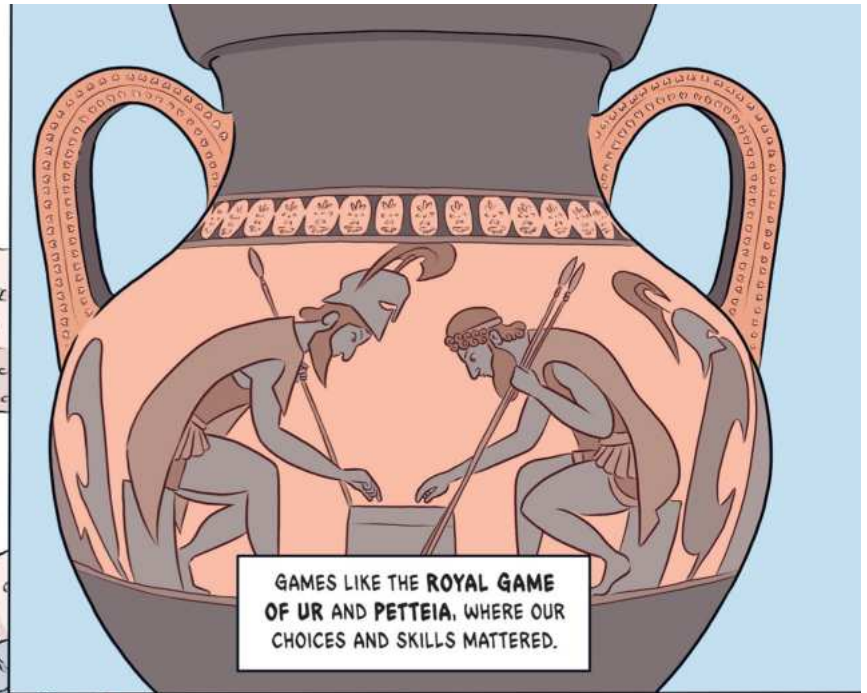
GAMES LIKE THE **ROYAL GAME OF UR** AND **PETTEIA**, WHERE OUR CHOICES AND SKILLS MATTERED.

BY THE TIME OF **GO** AND **CHESS**, PLAYERS WERE FACING SYSTEMS WHERE QUINTILLIONS OF OPTIONS LAY BEFORE THEM, AND EACH CHOICE COULD RADICALLY ALTER THE COURSE OF THE GAME.

WE WERE FASCINATED. AS PHILOSOPHY SHIFTED TOWARDS NOTIONS OF FREE WILL, GAMES LAID BARE THE POWERFUL ROLE THAT CHOICE COULD PLAY IN OUR LIVES.

TO THIS DAY, THIS FASCINATION REMAINS, A FASCINATION THAT RESTS MAINLY ON THE AGENCY THEY GIVE US. IN A CHAOTIC WORLD, GAMES GRANT US A SENSE OF CHOICE AND CONTROL. THE FREEDOM TO INHABIT NEW FORMS AND MOVE UNIMPEDED. THE POWER TO MAKE MEANINGFUL DECISIONS AND SEE THE OUTCOMES OF OUR CHOICES.

FOR VIDEO GAME DESIGNER **WARREN SPECTOR**, THE CHOICES AVAILABLE TO THE PLAYER — THE LIMITS OF THEIR FREEDOM — MAKE UP THE GAME'S **POSSIBILITY SPACE.**

THIS **POSSIBILITY SPACE** IS THE CULMINATION OF THE GAME'S RULES: THE BOUNDS OF THE PLAYSPACE, ITS PHYSICS, THE LIMITS TO WHAT WE CAN DO.

IN **PONG** THE POSSIBILITY SPACE IS INCREDIBLY NARROW.

ALL YOU CAN DO IS POSITION YOUR PADDLE AND RETURN THE BALL TO YOUR OPPONENT.

THESE CHOICES ARE SPLIT-SECOND DECISIONS. REFLEXES AND REACTIONS MADE IN THE MIDST OF THE ACTION.

IN GAMES LIKE **SKYRIM** (2011), THE **FALLOUT** SERIES OR THE **FINAL FANTASY** SERIES HOWEVER, THE CHOICES AVAILABLE CAN SEEM LIMITLESS.

STATS

STRENGTH 8
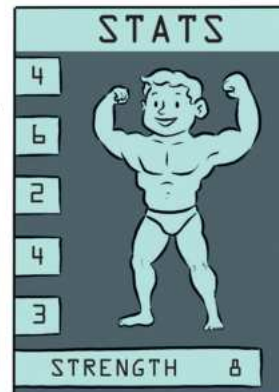
HERE PLAYERS **FORGE THEIR OWN PATHS**, THROUGH ENORMOUS MAPS AND NEAR-INFINITE WAYS TO CUSTOMIZE THEIR CHARACTER'S APPEARANCE, ABILITIES AND WEAPONS.

YET NO MATTER HOW BIG THE GAME, THERE ARE ALWAYS LIMITS. **GRAND THEFT AUTO V**'S PLAYGROUND MAY BE MASSIVE, BUT WE DISCOVER THE LIMITS OF ITS POSSIBILITY SPACE IN WHAT INTERACTIONS ARE FACILITATED, WHAT ITS PHYSICS CAN SIMULATE, WHAT ITS BODIES ARE PROGRAMMED TO DO.

IT'S A WORLD FOCUSSED ON AGGRESSION, DESTRUCTION AND CONSUMPTION. THERE'S NO WAY TO HEAL ANOTHER PERSON'S WOUNDS. NO OPPORTUNITY TO DONATE YOUR VAST WEALTH TO CHARITY.

THE KINDS OF CHOICES A GAME ALLOWS US TO MAKE CAN TELL US A LOT ABOUT THE IDEOLOGY OF ITS CREATORS, THE INDUSTRY, AND CULTURE AS A WHOLE.

THE ORIGINAL **MASS EFFECT** (2007) OFFERS ITS PLAYERS A BEAUTIFUL, COMPLEX AND POLITICALLY BELIEVABLE UNIVERSE OF PLANETS TO EXPLORE, WITH A NARRATIVE THAT RESPONDS TO YOUR CHOICES ALONG THE WAY.

YET, WHILE THE GAME ALLOWS ITS MALE HERO COMMANDER SHEPARD TO PURSUE ROMANTIC RELATIONSHIPS WITH A NUMBER OF FEMALE CHARACTERS, THERE IS NO OPTION FOR HIM TO PURSUE ANY MALE ONES.

MASS EFFECT ISN'T ALONE IN THIS. THROUGHOUT THE INDUSTRY, HETEROSEXUALITY IS TIME AND AGAIN PRESENTED AS THE DEFAULT OR ONLY CHOICE FOR PLAYERS.

DESPITE ALL THE SUPPOSED FREEDOM OFFERED BY GAMES, FAR TOO OFTEN THE SIMPLE ACT OF REFLECTING ONE'S OWN SEXUALITY IS A PHYSICAL IMPOSSIBILITY. AS IF THE PRE-PROGRAMMED LAWS OF THE UNIVERSE SIMPLY WOULDN'T ALLOW IT.

IT'S A DISPIRITING PROBLEM, A SYMPTOM OF A CULTURE THAT SIDELINES AND EFFACES QUEER EXPERIENCES TIME AND AGAIN.

NOT ALL GAMES HAVE BEEN SO LIMITING. FROM **THE SIMS** (2000) AND **STARDEW VALLEY** (2016) TO **FABLE** (2004) AND **ASSASSIN'S CREED ODYSSEY** (2018), NUMEROUS GAMES HAVE ALLOWED PLAYERS TO DATE WHOEVER THEY LIKE.

MEANWHILE, FROM **C. M. RALPH**'S **CAPER IN THE CASTRO** (1989) TO INDIE GAMES LIKE **ROBERT YANG**'S **RADIATOR 2** (2016) AND **THE TEAROOM** (2017), SOME GAME DESIGNERS HAVE PUT QUEER CHARACTERS FRONT AND CENTRE, USING THE MEDIUM TO EXPLORE QUEER HISTORY AND EXPERIENCE.
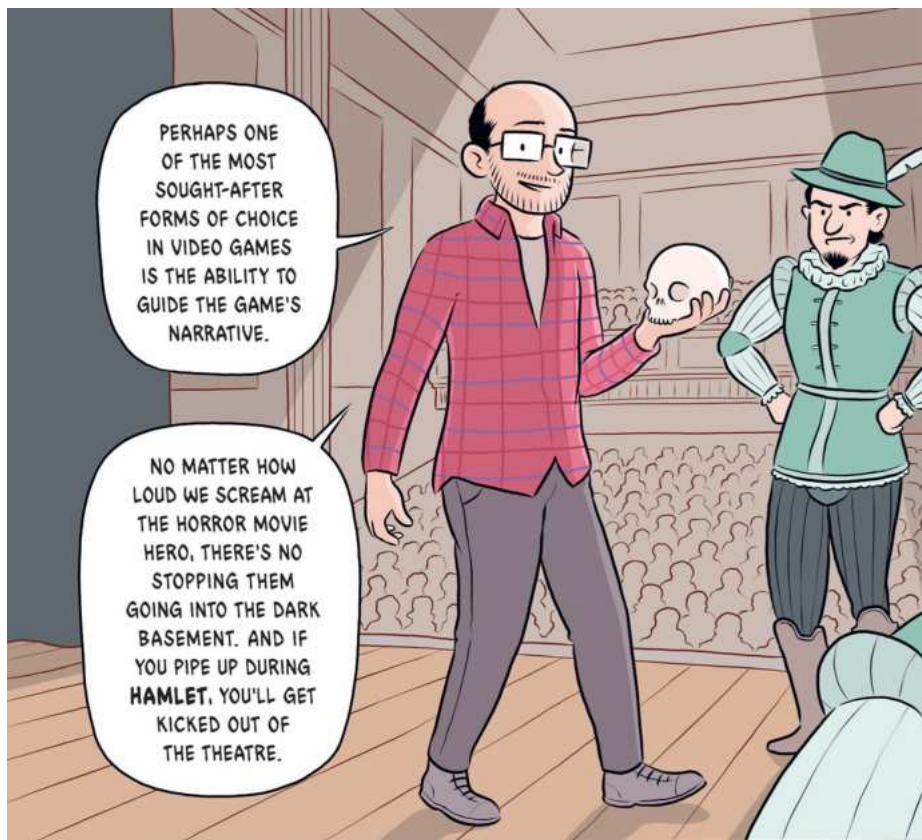
PERHAPS ONE OF THE MOST SOUGHT-AFTER FORMS OF CHOICE IN VIDEO GAMES IS THE ABILITY TO GUIDE THE GAME'S NARRATIVE.

NO MATTER HOW LOUD WE SCREAM AT THE HORROR MOVIE HERO, THERE'S NO STOPPING THEM GOING INTO THE DARK BASEMENT. AND IF YOU PIPE UP DURING **HAMLET**, YOU'LL GET KICKED OUT OF THE THEATRE.

NOT SO IN VIDEO GAMES, WHICH ROPE US INTO THE STORYTELLING PROCESS, TURNING US INTO STORYTELLERS AND CO-AUTHORS OF THE GAMES WE PLAY.

NO WAY I'M GOING DOWN THERE!

YET, THE IDEA THAT WE MIGHT BE ABLE TO INTERACT WITH STORIES DIDN'T BEGIN WITH VIDEO GAMES.
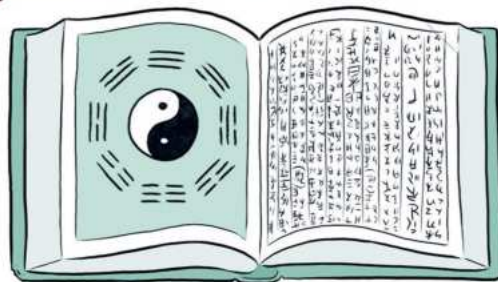
THE CHINESE **I CHING** OR **BOOK OF CHANGES** HAS BEEN USED SINCE THE TIME OF THE WESTERN ZHOU DYNASTY AROUND 3,000 YEARS AGO AS A WAY OF DIVINING THE FUTURE.
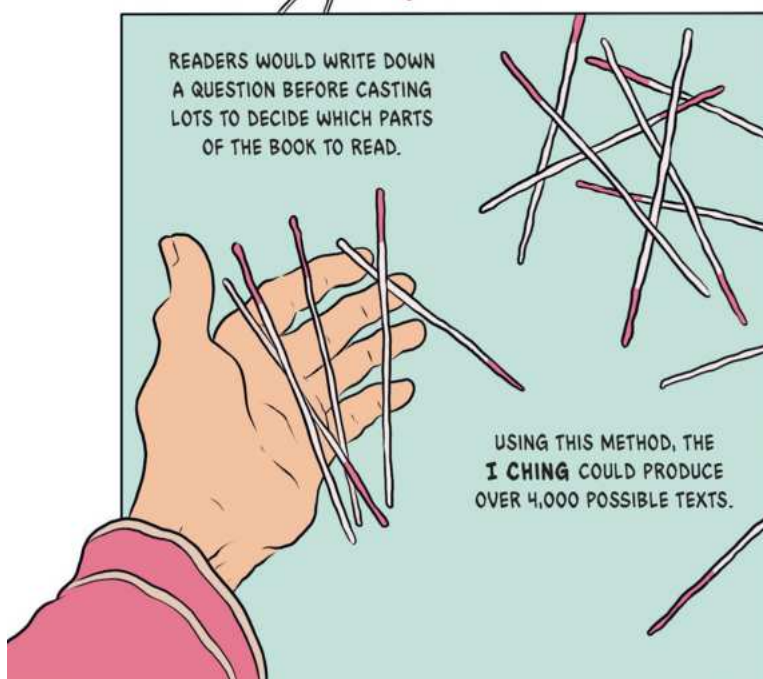
READERS WOULD WRITE DOWN A QUESTION BEFORE CASTING LOTS TO DECIDE WHICH PARTS OF THE BOOK TO READ.

USING THIS METHOD, THE **I CHING** COULD PRODUCE OVER 4,000 POSSIBLE TEXTS.

IT WAS THE FIRST MERGER OF GAME AND STORYTELLING THAT WE KNOW OF, EACH PLAY-THROUGH OFFERING THE READER A DIFFERENT EXPERIENCE. A DIFFERENT FORTUNE TOLD.
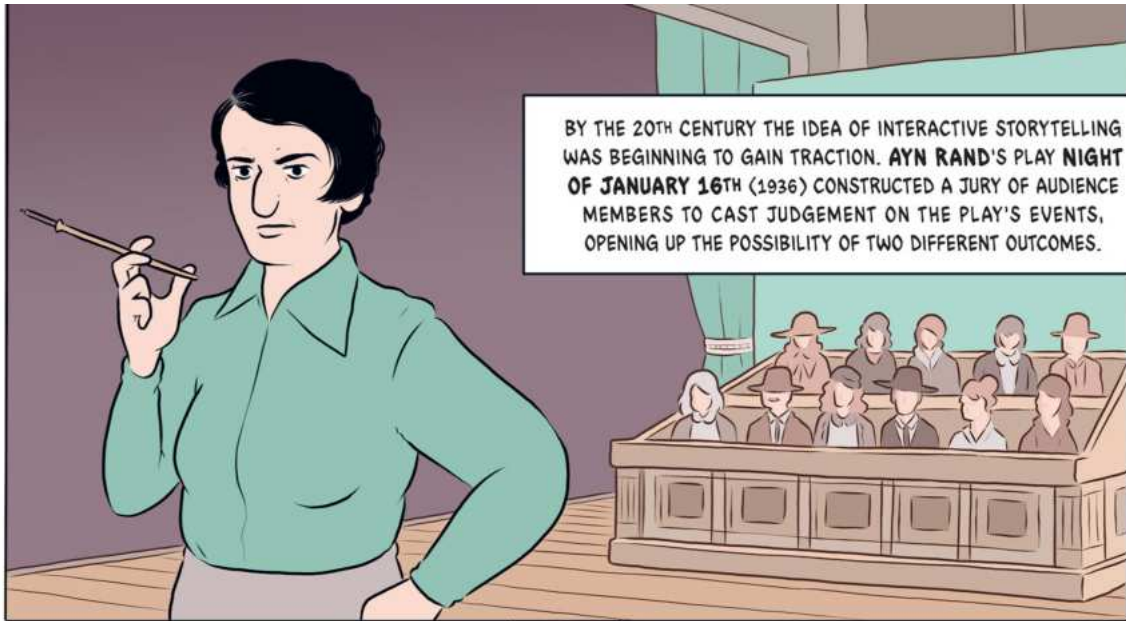
BY THE 20TH CENTURY THE IDEA OF INTERACTIVE STORYTELLING WAS BEGINNING TO GAIN TRACTION. **AYN RAND**'S PLAY **NIGHT OF JANUARY 16**TH (1936) CONSTRUCTED A JURY OF AUDIENCE MEMBERS TO CAST JUDGEMENT ON THE PLAY'S EVENTS, OPENING UP THE POSSIBILITY OF TWO DIFFERENT OUTCOMES.
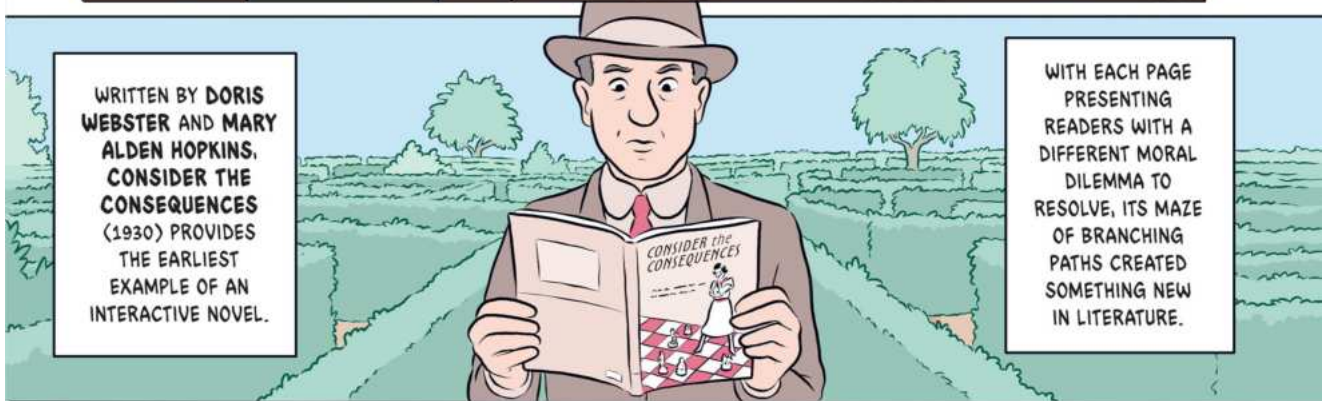
WRITTEN BY **DORIS WEBSTER** AND **MARY ALDEN HOPKINS**, **CONSIDER THE CONSEQUENCES** (1930) PROVIDES THE EARLIEST EXAMPLE OF AN INTERACTIVE NOVEL.

WITH EACH PAGE PRESENTING READERS WITH A DIFFERENT MORAL DILEMMA TO RESOLVE, ITS MAZE OF BRANCHING PATHS CREATED SOMETHING NEW IN LITERATURE.

THE NOVEL PAVED THE WAY FOR INTERACTIVE STORYTELLING, AND BY THE 1980s **CHOOSE YOUR OWN ADVENTURE** BOOKS WERE THE MOST POPULAR CHILDREN'S SERIES ON THE SHELVES.
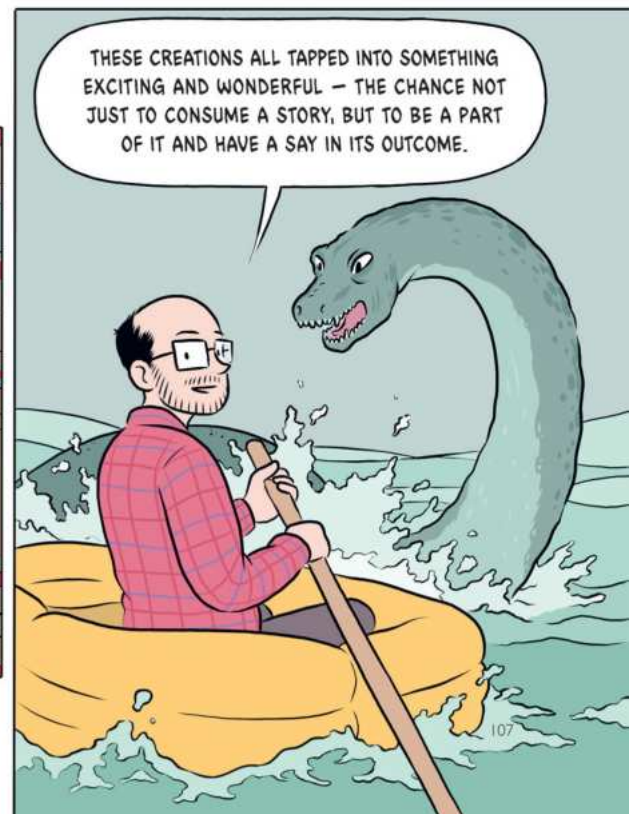
THESE CREATIONS ALL TAPPED INTO SOMETHING EXCITING AND WONDERFUL — THE CHANCE NOT JUST TO CONSUME A STORY, BUT TO BE A PART OF IT AND HAVE A SAY IN ITS OUTCOME.

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THIS FASCINATION WITH INTERACTIVE STORIES WAS ALSO FINDING ITS WAY INTO TABLETOP GAMES.

BY THE 1970s, TABLETOP ROLE-PLAYING GAMES WERE GROWING IN POPULARITY, SPEARHEADED BY **GARY GYGAX** AND **DAVE ARNESON**'S **DUNGEONS & DRAGONS** (1974).

POWERED BY A RULE BOOK, DICE AND THE IMAGINATION OF ITS PLAYERS, **DUNGEONS & DRAGONS** OFFERED SOMETHING CREATIVE, IMMERSIVE AND MEANINGFUL.

IT GAVE PLAYERS HUDDLED ROUND TABLES IN KITCHENS, BASEMENTS AND EVEN PRISON REC ROOMS, A FORM OF INTERACTIVE, COLLABORATIVE STORYTELLING.

A CHANCE TO TAKE CONTROL.

TO MAKE CHOICES.

TO AFFECT THE STORY.

THE GAME'S IMPACT WAS ENORMOUS. BY 1981 IT HAD MORE THAN 3 MILLION PLAYERS WORLDWIDE.

AND WITHIN THE FLEDGLING WORLD OF VIDEO GAME DESIGN, ITS EFFECTS WERE SOON BEING FELT.

WHILE ARCADE GAMES WERE TAKING THE WORLD BY STORM, **DUNGEONS & DRAGONS**-INSPIRED TEXT ADVENTURE GAMES LIKE **ADVENTURE** (1975) AND **ZORK** (1977) SPARKED A QUIET REVOLUTION.
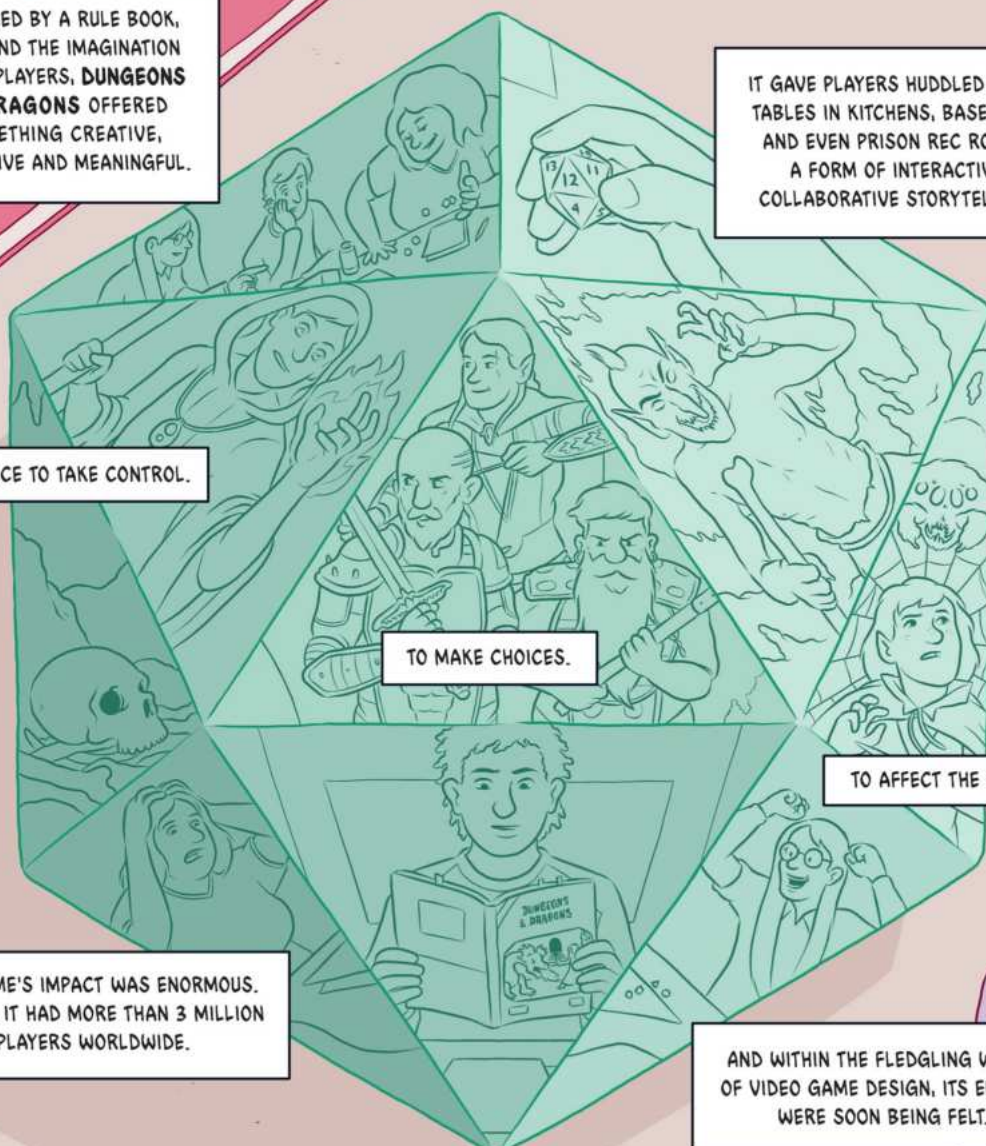
SPREADING BETWEEN CAMPUS COMPUTERS, PEOPLE WOULD CROWD ROUND SCREENS TRYING TO SOLVE THEIR PUZZLES, SHARING THE EXPERIENCE OF THE STORY AS IT UNFOLDED.

INSPIRED, OTHERS WERE SOON EXPLORING THE STORYTELLING POTENTIAL OF GAMES. WITH **MYSTERY HOUSE** (1980) AND THE **KING'S QUEST** SERIES, **ROBERTA WILLIAMS** TOOK THINGS TO THE NEXT LEVEL, USING TEXT AND THE LIMITED GRAPHICS OF HER **APPLE II** COMPUTER TO CONCOCT GRIPPING INTERACTIVE MYSTERIES.
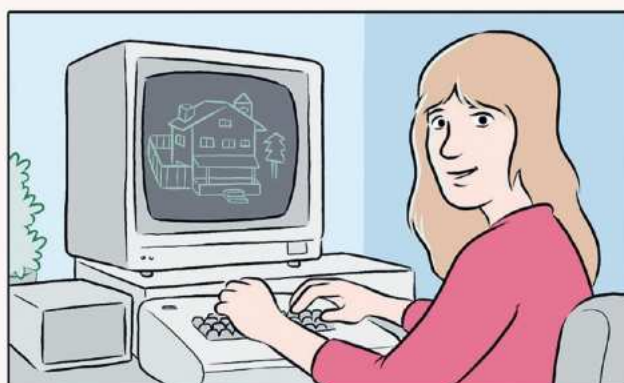
POINT-AND-CLICK ADVENTURE GAMES LIKE **THE SECRET OF MONKEY ISLAND** (1990) ALLOWED PLAYERS TO TALK TO OTHER CHARACTERS, WITH DIALOGUE OPTIONS DICTATING HOW THEY RESPONDED TO YOU.

I AM GUYBRUSH THREEPWOOD, MIGHTY PIRATE!

AND ACROSS THE WORLD, HOBBYISTS GOT IN ON THE ACT TOO, USING HOME COMPUTERS LIKE THE **ZX SPECTRUM** AND **APPLE II** TO WRITE THEIR OWN INTERACTIVE TALES AND TRADE THEM AROUND ON FLOPPY DISKS.

Pimania

MEGAGALACTIC LLAMAS BATTLE AT THE EDGE OF TIME

CAPTAIN BLOOD

Ant Attack

LA ABADÍA DEL CRIMEN

RahaRuhtinas

DEUS EX MACHINA

...ED D: Monty Mole

MANIC MINER

A FAR CRY FROM THE ARCADES, THESE WEREN'T LINEAR EXPERIENCES DRIVEN BY FIRE AND FURY, BUT BRANCHING NARRATIVES RICH WITH DETAIL, WHERE MEANINGFUL CHOICE WAS AT THE HEART OF THE PLAYER'S EXPERIENCE.

TO THIS DAY, THE THRILL OF SEEING STORIES INFLUENCED BY OUR CHOICES REMAINS AN ALLURING FACET OF THE MEDIUM.
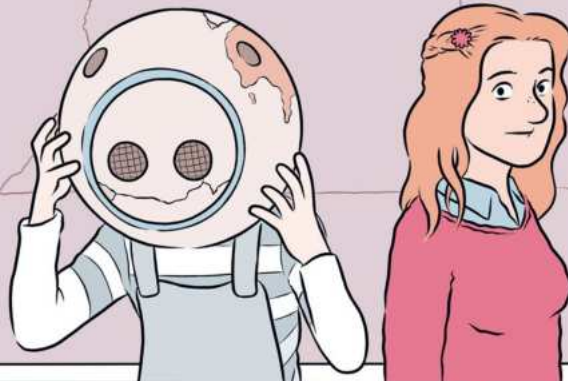
FROM SPRAWLING ROLE-PLAYING GAMES LIKE **BALDUR'S GATE** (1998) TO HUGELY POPULAR JAPANESE VISUAL NOVELS LIKE **ZERO TIME DILEMMA** (2016), VIDEO GAMES LEAVE US RESPONSIBLE FOR THE FATES OF THE CHARACTERS WE CONTROL.

IN SMART HORROR-MOVIE HOMAGE **UNTIL DAWN** (2015) THE LIVES OF A BAND OF TEENAGERS STRANDED IN A MOUNTAIN CABIN RESTS IN YOUR HANDS.

IT'S A BEWITCHING CONCEPT, ALLOWING YOU TO STEP INTO A WELL-WORN CINEMATIC SCENARIO AND SEE IF YOU'D SURVIVE.

AS THE TEENS ARE HUNTED DOWN, YOU'RE FACED WITH AGONIZING DECISIONS OVER WHO TO SAVE AND HOW MUCH YOU'RE WILLING TO RISK TO SURVIVE.

IT'S A GARDEN OF FORKING PATHS. A MAZE OF DECISIONS WHOSE FINAL DESTINATION IS UNKNOWN.

GOING INTO THE DARK BASEMENT, OR FORGETTING TO RETRIEVE A WEAPON CAN HAVE DISASTROUS CONSEQUENCES DOWN THE LINE.

THIS IDEA OF BEING RESPONSIBLE FOR OUR CHOICES IS NEVER MORE ACUTELY FELT
THAN IN THE EVENT OF OUR FAILURE. WE ALL REMEMBER THOSE MOMENTS ...

BUNGLING A SICK RIFF IN **GUITAR HERO.**

SKIDDING OFF THE TRACK DEAD LAST IN **MARIO KART.**

OVERWHELMED BY AN OUTBREAK IN **PANDEMIC.**

FROM THE TOUGH-AS-NAILS FANTASY OF **DARK SOULS** (2011) TO THE BOMB DEFUSAL SIM **KEEP TALKING AND NOBODY EXPLODES** (2015), GAMES REGULARLY TAKE PLACE ON THE KNIFE'S EDGE BETWEEN LIFE AND DEATH, SUCCESS AND FAILURE.

IN MANY GAMES WE SPEND MOST OF OUR TIME FAILING. IT CAN BE FRUSTRATING. HUMILIATING.

YOU'VE GOT A LOT TO LEARN BEFORE YOU BEAT ME. TRY AGAIN, KIDDO!

YET, THEORIST **JESPER JUUL** THINKS WE SHOULDN'T LOOK AT FAILURE IN GAMES AS A BUG, BUT A CRUCIAL FEATURE:

'IT PROVES THAT WE MATTER, THAT THE WORLD DOES NOT SIMPLY CONTINUE REGARDLESS OF OUR ACTIONS.'

'FAILURE FORCES US TO RECONSIDER WHAT WE ARE DOING, TO LEARN. FAILURE CONNECTS US PERSONALLY TO THE EVENTS OF THE GAME ...'

YOU HAVE DIED OF DYSENTERY
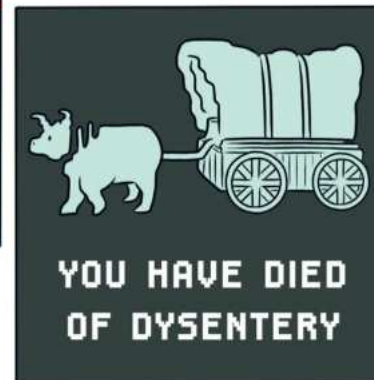
WHILE IN LIFE A MISTAKE MADE IN THE WRONG MOMENT MAY COST US EVERYTHING, GAMES PROVIDE US WITH A SAFE SPACE TO FAIL. A SPACE WHERE OUR MISTAKES CAN BE UNDONE.

GAMING TRANSFORMS OUR USUALLY LINEAR EXPERIENCE OF TIME INTO A SERIES OF LOOPS AND REPETITIONS. WE FAIL. WE REWIND. WE TRY AGAIN.

FOR SOME DESIGNERS THE CYCLICAL NATURE OF PLAY OFFERS A COMPELLING NARRATIVE. DELIGHTFUL PUZZLERS **BRAID** (2008) AND **THE SEXY BRUTALE** (2017) GIVE PLAYERS CONTROL OVER TIME, ALLOWING THEM TO STOP OR REWIND PLAY TO UNDO PAST MISTAKES.

GAME OVER

CONTINUE?

YES

BUT FOR MOST GAMES THESE REPETITIONS REMAIN AN UNSPOKEN FACET OF PLAY. THE CHANCE TO TRY AGAIN IS ONE OF THE KEY PLEASURES OF GAMING.
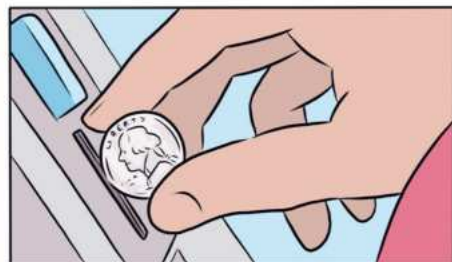
AS THEORIST **BRENDAN KEOGH** SUGGESTS: 'TO PLAY A VIDEOGAME IS TO OVERWRITE INVALIDATED PASTS AND TO PEEK AT ALTERNATIVE FUTURES... LARA CROFT DIDN'T DIE, BUT SHE ALSO DID DIE — DOZENS OF TIMES.'

THROUGH CYCLES AND RELOADS, GAMES OPEN DOORS TO PARALLEL UNIVERSES OF POSSIBILITY, GIVING US A CHANCE TO TRY DIFFERENT APPROACHES, EXAMINE PATHS NOT TAKEN, OR EXPERIENCE LIVES NOT LIVED.

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FOR THEORIST **MIGUEL SICART**, THE CYCLICAL NATURE OF GAMES POSES A PROBLEM: 'HOW CAN A CONSEQUENCE BE IMPORTANT IF PLAYERS CAN RELOAD AND RETURN TO THE STATE WHERE DECISIONS ARE STILL POSSIBLE?'

IN **LIFE IS STRANGE** (2015), TEENAGE PHOTOGRAPHER MAX CAULFIELD DISCOVERS THE ABILITY TO FREEZE AND REWIND TIME.

THROWN INTO A CAMPUS DRAMA AND MISSING-PERSON MYSTERY, THE PLAYER HARNESSES MAX'S POWER TO NAVIGATE A SERIES OF TOUGH MORAL DECISIONS.

ABLE TO SEE THE OUTCOME OF EACH CHOICE, THE PLAYER CAN REVERSE TIME AND TRY SOMETHING DIFFERENT, ALLOWING US TO PEER INTO MULTIPLE PLANES OF POSSIBILITY.

THE DRAMA COMES TO A HEAD WHEN MAX'S FRIEND KATE THREATENS SUICIDE.

WITH MAX'S POWERS DEPLETED, WE'RE SUDDENLY DEPRIVED OF THE ABILITY TO REWIND. AS WE ATTEMPT TO TALK KATE AWAY FROM THE LEDGE WE BECOME PAINFULLY AWARE OF THE WEIGHT OF OUR CHOICES.
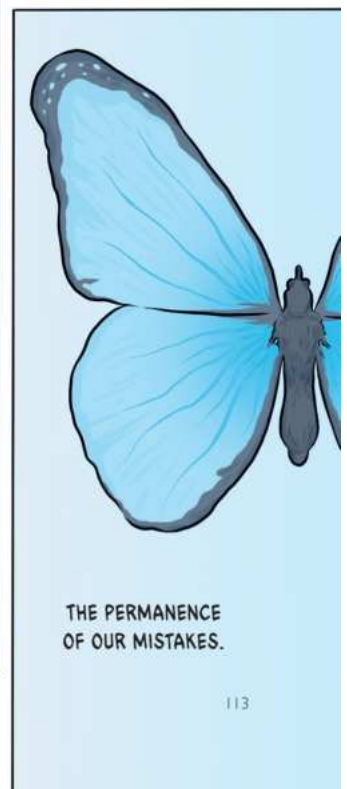
THE PERMANENCE OF OUR MISTAKES.

WHILE **LIFE IS STRANGE** TOYS WITH CONSEQUENCE, GAMES LIKE **ROGUE** (1980) AND **DON'T STARVE** (2013) THROW PLAYERS INTO UNFORGIVING WORLDS WHERE EVEN PLAYER DEATH IS PERMANENT.

BLEAK AND ATMOSPHERIC, IN **THE LONG DARK** (2017) PLAYERS FIND THEMSELVES STRANDED AND FIGHTING FOR THEIR LIVES IN A FREEZING CANADIAN WILDERNESS AFTER AN APOCALYPTIC CATASTROPHE.

GATHERING RESOURCES, FINDING SHELTER, KEEPING WARM. THE SLIGHTEST ERROR OF JUDGEMENT CAN BE FATAL. THERE'S NO CHANCE OF A RETRY. YOU START AGAIN FROM SCRATCH.

FOR MANY, IT'S A FORM OF PLAY THAT BRINGS GAMES TO LIFE, AN ANTIDOTE TO THE LOW-STAKES NATURE OF MOST MODERN VIDEO GAMES. PERMANENT DEATH BRINGS A SENSE OF WEIGHT TO EVERY CHOICE WE MAKE, FILLING PLAY WITH TENSION AND ANXIETY.

DEVOURED BY WOLVES OR FREEZING TO DEATH ON A CANADIAN MOUNTAINSIDE, WE MAY FEEL DISAPPOINTED, BUT WE KNOW IT'S FAIR.
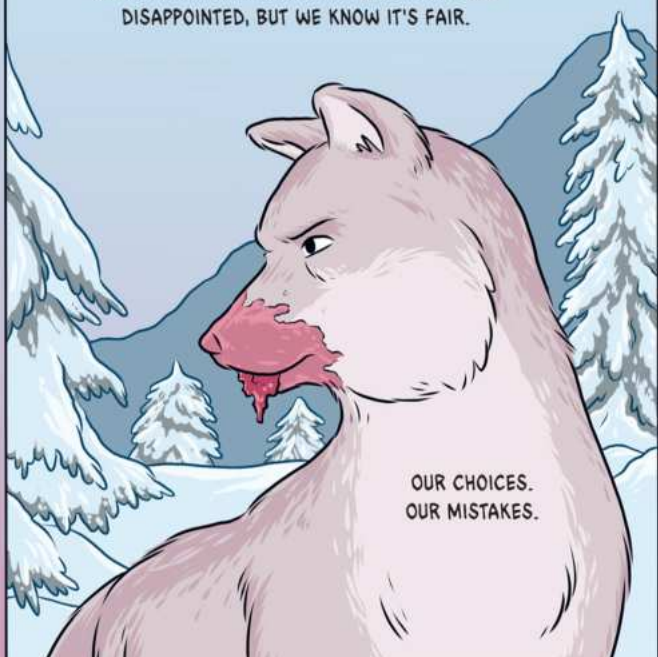
OUR CHOICES. OUR MISTAKES.

FASCINATED BY CHOICE AND CONSEQUENCE, GAMES CAN BE THE PERFECT FORUM TO EXPLORE THE IDEA OF MORALITY.

MANY GAMES LET YOU INHABIT TRANSGRESSIVE MORAL POSITIONS, ALLOWING YOU TO STEP INTO THE SHOES OF CRIMINALS OR CONTRACT KILLERS.

IT CAN BE A DELIGHTFULLY SUBVERSIVE EXPERIENCE, FREEING YOU FROM REAL-WORLD MORAL CONSTRAINTS TO LET LOOSE YOUR DARKEST INSTINCTS.

OTHERS PRESENT YOU WITH A SERIES OF MORAL DECISIONS, THEIR BRANCHING NARRATIVE STRUCTURES ALLOWING YOU TO FORGE YOUR OWN MORAL PATH.

WHILE OTHER MEDIA CAN REPRESENT CHARACTERS FACING TOUGH DECISIONS, ONLY GAMES MAKE YOU LIVE WITH THE CONSEQUENCES OF DECISIONS YOU'VE MADE.

BUT FOR **MIGUEL SICART**, MOST GAMES DON'T GO NEARLY FAR ENOUGH, THEIR MORAL QUANDARIES 'FORMULATED AS MULTIPLE-CHOICE TESTS IN WHICH PLAYERS HAVE CLOSE TO PERFECT INFORMATION.'

THIS IS MORALITY AS A BINARY AND ABSOLUTE. CHOOSE RENEGADE OR PARAGON, DARK SIDE OR LIGHT SIDE. IT'S MORE ABOUT DEFINING YOUR PATH THROUGH THE GAME AND THE POWERS AVAILABLE TO YOU, THAN ACTUALLY CONFRONTING TOUGH CHOICES AND THEIR IMPLICATIONS.

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FOR SOME GAMES THOUGH, THE MORAL IMPLICATIONS OF OUR CHOICES EXIST NOT IN THE GAME, BUT FOR US ALONE TO LIVE WITH.

IN THE DARK AND DYSTOPIAN **PAPERS, PLEASE** (2013) YOU PLAY AS A BORDER AGENT IN THE NATION OF ARSTOTZKA, WORKING TO KEEP YOUR FAMILY WARM AND FED.

RESPONSIBLE FOR PROCESSING A QUEUE OF IMMIGRANTS FROM OTHER TOTALITARIAN REGIMES, IT ALL STARTS QUITE SIMPLY: CHECKING NAMES, FACES AND COUNTRIES OF ORIGIN.

BUT AS THE DAYS PASS, THE SECURITY CHECKS BECOME INCREASINGLY STRICT, ARCANE AND DEHUMANIZING. YOU FACE HARSH DISCIPLINE IF YOU SLIP UP ONE TIME TOO MANY.

AMIDST PILES OF PAPERWORK, THE GAME CONFRONTS YOU WITH A HUNDRED TINY TRAGEDIES.

I WILL BE KILLED IF I RETURN TO ANTEGRIA.

WITH YOUR FAMILY'S HEALTH DECLINING, YOU'RE FACED WITH AN IMPOSSIBLE CHOICE. LET THROUGH THOSE WITH FORGED DOCUMENTS, RISKING THE LIVES OF YOU AND YOUR FAMILY? OR TURN THEM AWAY, TO MEET THEIR FATE?

AS THE PRESSURE MOUNTS, IT BECOMES ALL TOO EASY TO JUST TRY AND GET ON WITH YOUR JOB ...

IGNORING THE PLEAS FOR ASYLUM, THE UNCERTAIN FATES OF THOSE DRAGGED OFF TO DETENTION, THE DESPERATE FEW GUNNED DOWN TRYING TO RUSH PAST SECURITY.

DENIED

A SIMILAR SENSE OF COMPLICITY EMERGES IN **BRENDA ROMERO**'S BOARD GAME **TRAIN** (2009). IN THE GAME, PLAYERS COMPETE TO LOAD TRAINS WITH PASSENGERS AND GET THEM TO THEIR DESTINATION. IT SEEMS LIKE FUN.

BUT ON ARRIVAL, PLAYERS DRAW A CARD, AND IT ALL COMES INTO FOCUS.

Destination:
DACHAU
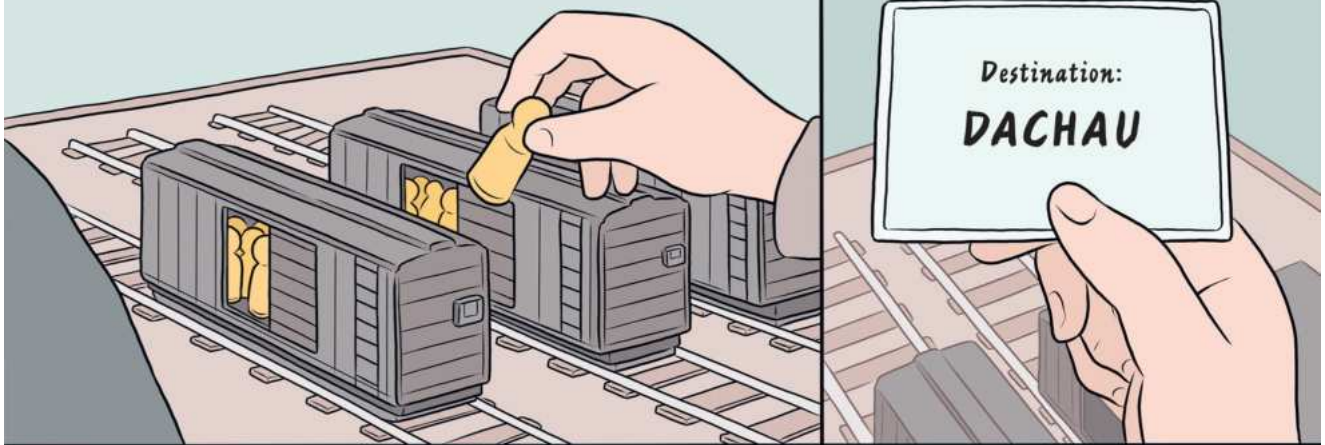
LIKE **PAPERS, PLEASE**, **TRAIN** POWERFULLY EXPRESSES **HANNAH ARENDT**'S IDEA OF 'THE BANALITY OF EVIL':

THE ESSENCE OF TOTALITARIAN GOVERNMENT, AND PERHAPS THE NATURE OF EVERY BUREAUCRACY, IS TO MAKE FUNCTIONARIES AND MERE COGS IN THE ADMINISTRATIVE MACHINERY OUT OF MEN ...

IN **TRAIN** WE ARE GRIMLY AWARE THAT SOMETHING'S NOT RIGHT. BUT WE ARE TOO CAUGHT UP IN LOGISTICS TO ENQUIRE FURTHER.

IN **PAPERS, PLEASE**, WE KNOW THAT WE'RE TAKING PART IN SOMETHING AWFUL, BUT WE MAKE EXCUSES. I'M JUST DOING MY JOB. MY FAMILY NEEDS MONEY TO LIVE. IF I DON'T DO IT SOMEBODY ELSE WILL.

ENTRY VISA

KOLECH

WHEN ASKING HOW TOTALITARIANISM CAN FUNCTION, HOW GENOCIDES CAN OCCUR, THESE GAMES OFFER A VERY PERSONAL ANSWER.

POLICE
ICE

BECAUSE ORDINARY PEOPLE TAKE PART.

BECAUSE **WE** MAKE IT HAPPEN.

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SET IN A GRIMY AND PIXELATED CYBERPUNK WORLD, **LOCALHOST** (2017) APPLIES THESE SAME MORAL QUESTIONS TO A MORE FUTURISTIC CONTEXT.

IN THE GAME, THE PLAYER IS TASKED WITH TALKING TO A SERIES OF DEFUNCT ARTIFICIAL INTELLIGENCES, TO TRY TO CONVINCE THEM TO PERMANENTLY SHUT DOWN. AS YOU QUESTION EACH AI, YOU COME TO KNOW THEM. THEY BEG FOR THEIR LIVES. ACT DEPRESSED. LASH OUT IN ANGER.

DELETE ME? BUT WHERE WILL THESE MEMORIES GO?

NO. I REFUSE.
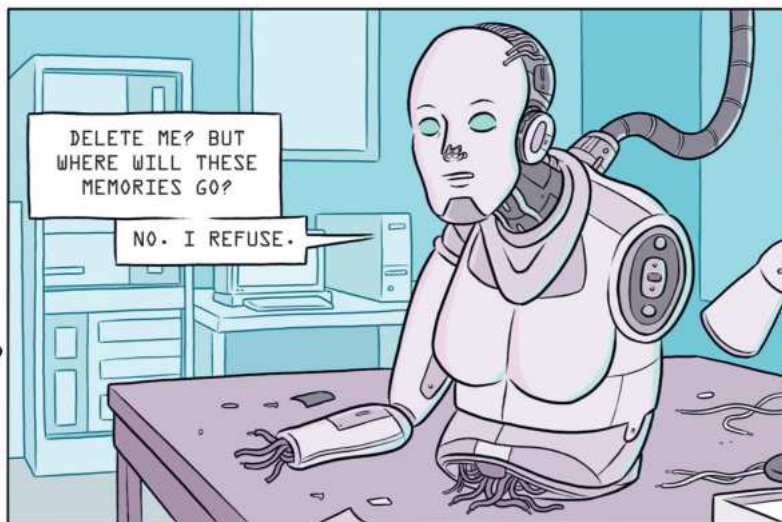
CRITIC **KALLE MacDONALD** SEES **LOCALHOST** AS 'A STORY WHERE AI ARE CONSIDERED TO BE LESS THAN HUMAN BECAUSE OF THEIR LEVEL OF HUMANITY OR CONSCIOUSNESS ... IT ASKS WHAT LEVEL OF HUMANITY IS DESERVING OF EMPATHY AND STATUS.'
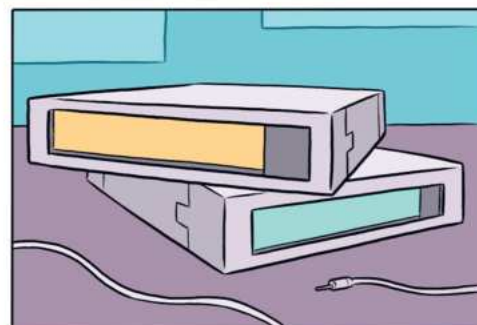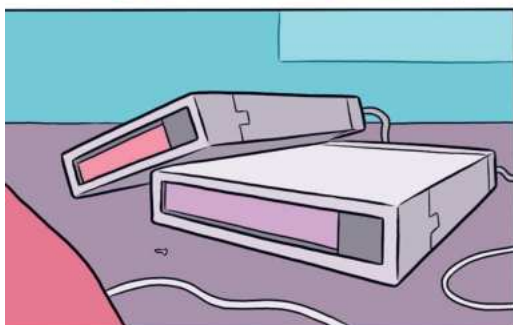
THE GAME OFFERS NO ANSWERS TO THIS QUESTION. NO REWARD FOR REFUSING TO DO YOUR JOB. NO BONUS FOR DOING IT. INSTEAD, THE PLAYER MUST MAKE THEIR OWN MIND UP, AND LIVE WITH THE DECISIONS THEY HAVE MADE.

IT'S A TIMELY PIECE. AS ARTIFICIAL INTELLIGENCE BLOSSOMS, IN GAMES AND THE TECH WORLD IN GENERAL, WE NEED TO ASK OURSELVES WHAT CONSTITUTES A CONSCIOUS BEING. WHAT LEVEL OF ARTIFICIALLY INTELLIGENT SUFFERING IS ACCEPTABLE FOR OUR CONVENIENCE OR ENTERTAINMENT?
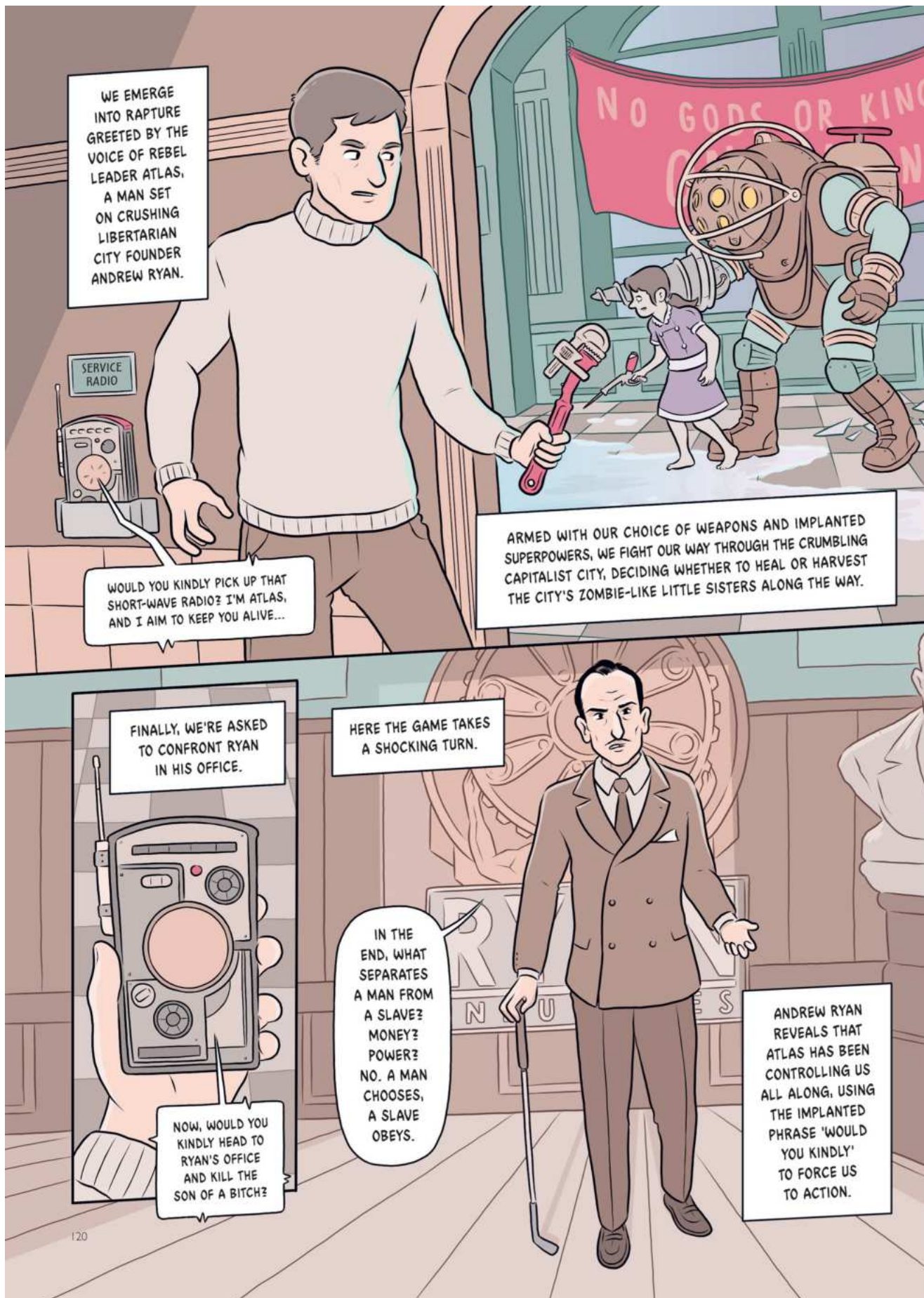
WE EMERGE INTO RAPTURE GREETED BY THE VOICE OF REBEL LEADER ATLAS, A MAN SET ON CRUSHING LIBERTARIAN CITY FOUNDER ANDREW RYAN.

SERVICE RADIO

WOULD YOU KINDLY PICK UP THAT SHORT-WAVE RADIO? I'M ATLAS, AND I AIM TO KEEP YOU ALIVE...

NO GODS OR KING

ARMED WITH OUR CHOICE OF WEAPONS AND IMPLANTED SUPERPOWERS, WE FIGHT OUR WAY THROUGH THE CRUMBLING CAPITALIST CITY, DECIDING WHETHER TO HEAL OR HARVEST THE CITY'S ZOMBIE-LIKE LITTLE SISTERS ALONG THE WAY.

FINALLY, WE'RE ASKED TO CONFRONT RYAN IN HIS OFFICE.

HERE THE GAME TAKES A SHOCKING TURN.

NOW, WOULD YOU KINDLY HEAD TO RYAN'S OFFICE AND KILL THE SON OF A BITCH?

IN THE END, WHAT SEPARATES A MAN FROM A SLAVE? MONEY? POWER? NO. A MAN CHOOSES, A SLAVE OBEYS.

ANDREW RYAN REVEALS THAT ATLAS HAS BEEN CONTROLLING US ALL ALONG, USING THE IMPLANTED PHRASE 'WOULD YOU KINDLY' TO FORCE US TO ACTION.

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KILL!

SUDDENLY THE GAME WRESTS CONTROL FROM US AND WE **WATCH HELPLESSLY** AS OUR AVATAR BLUDGEONS RYAN TO DEATH.
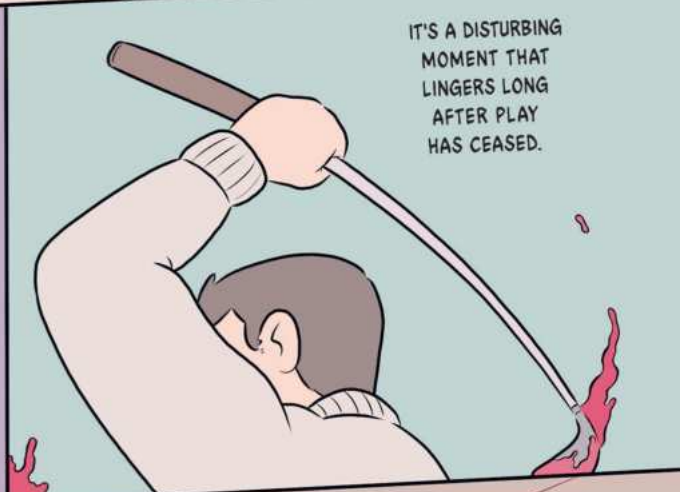
IT'S A DISTURBING MOMENT THAT LINGERS LONG AFTER PLAY HAS CEASED.
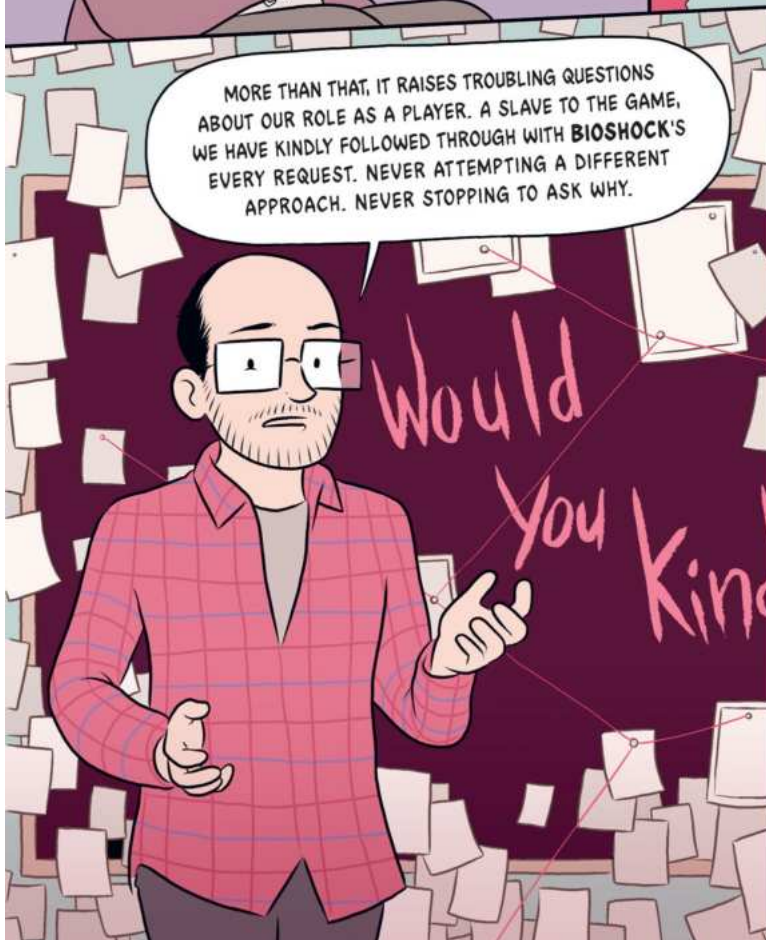
MORE THAN THAT, IT RAISES TROUBLING QUESTIONS ABOUT OUR ROLE AS A PLAYER. A SLAVE TO THE GAME, WE HAVE KINDLY FOLLOWED THROUGH WITH **BIOSHOCK**'S EVERY REQUEST. NEVER ATTEMPTING A DIFFERENT APPROACH. NEVER STOPPING TO ASK WHY.

FOR THEORISTS **MATTHEW WYSOCKI** AND **MATTHEW SCHANDLER**, IT'S AN UNSETTLING IDEA: 'IF WE ARE WILLING TO ACCEPT THAT WE MUST PERFORM CERTAIN ACTIONS BECAUSE "THE GAME REQUIRES IT" WHAT DOES THAT SAY ABOUT OUR FREE WILL? ... ARE WE WILLING TO COMMIT ATROCITIES BECAUSE WE ARE MERELY FOLLOWING THE ORDERS OF THE GAME?'

121

THE TRUTH IS THAT MOST NARRATIVE GAMES ARE **DETERMINISTIC**.

WHEN WE PLAY **TOMB RAIDER** OR **THE LAST OF US**, WE KNOW THAT, BARRING OUR OWN FAILURES OR DIVERSIONS, THE STORY WILL PLAY OUT IN AN ALREADY PRE-DETERMINED MANNER.

AND EVEN IN OPEN WORLDS LIKE **THE WITCHER** SERIES OR **BREATH OF THE WILD**, THE POSSIBILITY SPACE CREATED BY THE PROGRAMMERS STILL PUTS LIMITS ON OUR VIRTUAL FREE WILL.

SO, WHERE DOES THAT LEAVE US?

IN **SPEC OPS: THE LINE** (2012) YOU PLAY AS DAMAGED U.S. SOLDIER CAPTAIN WALKER, TRAVELLING DEEP INTO A DISASTER ZONE TO CONFRONT THE MUTINOUS COLONEL KONRAD.

WHAT BEGINS AS A STANDARD MILITARY SHOOTER GRADUALLY DESCENDS INTO A SCATHING PORTRAIT OF WAR AS YOU ARE REQUIRED TO PERFORM INCREASINGLY DESPICABLE WAR CRIMES IN PURSUIT OF YOUR GOAL.

AT ONE POINT, TO GET PAST A CAMP OF AMERICAN SOLDIERS, WALKER PROPOSES THE USE OF CHEMICAL WEAPONS.

THAT'S WHITE PHOSPHOROUS ... YOU'VE SEEN WHAT THIS SHIT DOES. THERE'S ALWAYS A CHOICE ...

BEFORE YOU KNOW IT, YOU'RE LOOKING DOWN AT THE BATTLEFIELD THROUGH A DRONE CAMERA, PREPARING TO OPEN FIRE.

NO, THERE'S REALLY NOT.

UNLIKE **MASS EFFECT, BIOSHOCK** OR **PAPERS, PLEASE,** THE GAME DOES NOT OFFER YOU AN IN-GAME CHOICE OVER WHETHER TO COMMIT THIS IMMORAL ACT.

INSTEAD, IT ASKS YOU TO MAKE ANOTHER KIND OF CHOICE.

MIGUEL SICART STATES, 'IF PLAYERS CHOOSE NOT TO BURN THE TROOPS ALIVE, THEN THEY CANNOT CONTINUE PLAYING THE GAME. IT IS IMPOSSIBLE TO DEFEAT THEM ANY OTHER WAY ...'

AND SO THE QUESTION BECOMES, DO I KEEP PLAYING?

OR DO I PUT DOWN THE CONTROLLER AND WALK AWAY?

THESE MAY BE VIRTUAL WAR CRIMES, BUT THEY ARE STILL DISQUIETING. IN THIS WAY THE GAME CONFRONTS US WITH TOUGH QUESTIONS OF WHY WE EVEN WANT TO PLAY GAMES LIKE THIS IN THE FIRST PLACE.

AS THE GAME'S LEAD WRITER **WALT WILLIAMS** PUTS IT:

IT REACHED THIS POINT WHERE IT WAS LIKE, 'OH, YOU WANT TO PLAY THIS KIND OF GAME FOR FUN?'

FUCK YOU. I'LL SHOW YOU WHAT'S FUN ABOUT THIS.

123

20TH APRIL 1999.

COLUMBINE, COLORADO.

COLUMBINE HIGH SCHOOL

COLUMBINE HIGH SCHOOL
HOME OF THE
REBELS

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DYLAN KLEBOLD AND
ERIC HARRIS MARCH INTO
THEIR HIGH SCHOOL.

ARMED TO THE TEETH.

PREPARED
TO KILL.

OVER THE NEXT 49 MINUTES,
12 STUDENTS AND A TEACHER
HAVE THEIR LIVES TAKEN
FROM THEM.

IT'S THE DEADLIEST CAMPUS
SHOOTING IN 30 YEARS.

AS THE COUNTRY SCRAMBLES TO UNDERSTAND HOW THIS HAS HAPPENED, POLICE SCOUR KLEBOLD'S HOME AND THE HARRIS FAMILY BASEMENT FOR CLUES.

THEY DISCOVER VIDEO DIARIES, WEB JOURNALS AND HANDWRITTEN NOTES IN WHICH HARRIS AND KLEBOLD HAD DOCUMENTED THEIR GROWING RAGE.

THEIR PLANS FOR MASS MURDER.

AMONGST ALL THIS WERE NUMEROUS REFERENCES TO THE VIDEO GAME **DOOM**.

HARRIS ESPECIALLY WAS OBSESSED.

PLAY ▷

IT'S GONNA BE LIKE FUCKING DOOM MAN ... THAT FUCKING SHOTGUN: STRAIGHT OUT OF DOOM.

RUMOURS CIRCULATE THAT HARRIS HAD EVEN MADE CUSTOM **DOOM** LEVELS BASED ON HIS SCHOOL, A DIGITAL TRAINING GROUND FOR MASS MURDER.

DOOM

AS THESE DETAILS ARE REPORTED BY THE PRESS, THE ENTIRE VIDEO GAME INDUSTRY COMES UNDER ATTACK.

SOON LAWSUITS ARE FILED. THE VICTIMS' FAMILIES ARE CLAIMING $5 BILLION IN DAMAGES FROM A COLLECTION OF VIDEO GAME PUBLISHERS.

9

12

HELD ACCOUNTABLE FOR AN EXPLOSION OF VIOLENCE IN THE REAL WORLD.

OF COURSE, VIDEO GAMES WOULDN'T BE THE FIRST ART FORM TO BE ACCUSED OF CORRUPTING US. FROM THE **PRINTING PRESS** TO THE **RADIO** TO THE **VHS TAPE**, THROUGHOUT HISTORY NEW MEDIA HAVE BEEN VIEWED WITH SUSPICION AS CORRUPTORS OF THE YOUNG, THE VULNERABLE, AND THE WORKING CLASS.

PROBABLY SINCE THE VERY BEGINNINGS OF HUMAN PLAY, GAMES HAVE BEEN VIEWED WITH SIMILAR SUSPICION.

SOME TIME AROUND 500 BCE, THE BUDDHA LAID OUT A LIST OF GAMES THAT HE BELIEVED WOULD DISTRACT HIS FOLLOWERS FROM THE PATH TO ENLIGHTENMENT.

THIS FEATURED EVERYTHING FROM DICE GAMES TO GUESSING A FRIEND'S THOUGHTS, AND INCLUDED A PROHIBITION ON PLAYING **ASHATAPADA** – A PRECURSOR TO **CHESS**.
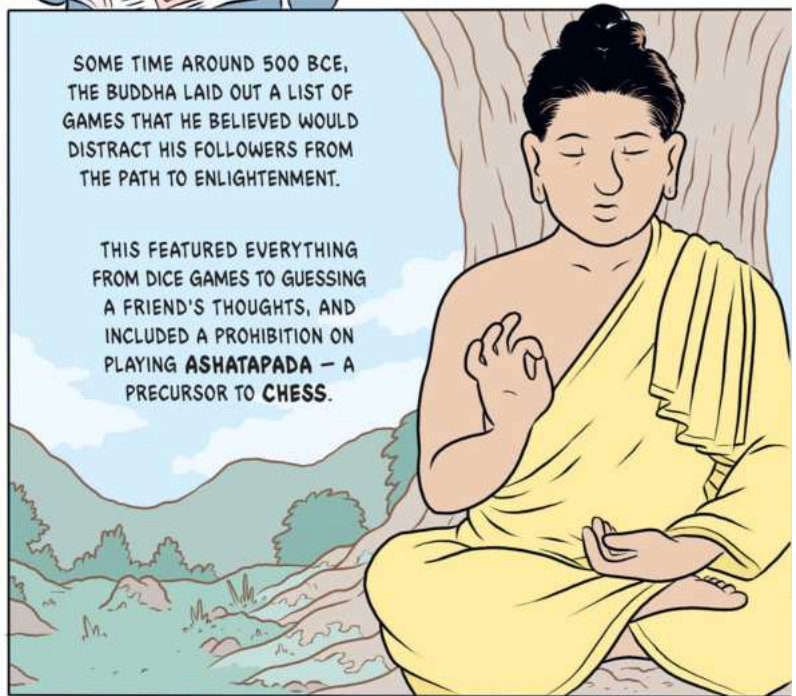
AND FROM EARLY ON, ISLAMIC TEACHING WARNED OF THE DANGERS OF GAMBLING AND GAMES, POINTING TO THEIR ABILITY TO DISTRACT PLAYERS FROM PRAYER AND CAST 'ANIMOSITY AND HATRED' BETWEEN THEM.
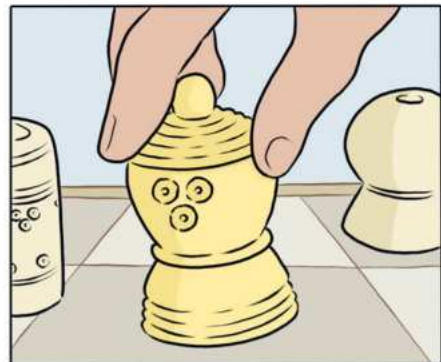
IN 1551, RUSSIAN EMPEROR **IVAN THE TERRIBLE** DECLARED **CHESS** AND DICE GAMES ILLEGAL, BRANDING THEM 'PASTIMES OF HELLENIC DEVILRY' ALONGSIDE MUSIC, DANCING AND ACTING.

PERHAPS HE WAS RIGHT. 33 YEARS LATER HE DIED OF A STROKE IN THE MIDDLE OF A **CHESS** GAME.
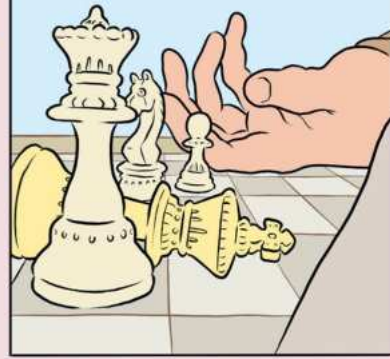
BY THE 1980s, ROLE-PLAYING SMASH-HIT **DUNGEONS & DRAGONS** WAS TANGLED UP IN MEDIA PANICS OVER SATANISM AND WITCHCRAFT, BLAMED FOR LEADING CHILDREN TO SUICIDE, MURDER AND THE OCCULT.

I'M CASTING CIRCLE OF DEATH!

ROLL 8D6, PHILIP!

PEOPLE TOOK THE PIECES OF THE GAME, THEY WOULD THROW THEM IN THE INCINERATOR OR THE FIREPLACE AND SCREAMS WOULD COME OUT BECAUSE THERE SEEMED TO BE SOME KIND OF **SPIRITUAL FORCES** INHABITING THOSE PIECES.

GARY GREENWALD

TIME AND AGAIN GAMES WERE PAINTED AS A MALIGN INFLUENCE. AN OBSESSION THAT COULD LEAD US DOWN A WAYWARD PATH, INTO APATHY, OBSESSION, VIOLENCE OR SIN.

THE INTRODUCTION OF VIDEO GAMES WERE MET WITH AS MUCH SUSPICION, IF NOT MORE.

WHILE THE EARLIEST GAMES WERE BLOODLESS, THEY WERE ALREADY FOUNDED ON VIOLENT IDEAS. **SPACEWAR!** GLORIFIED SPACE-AGE CONFLICT, AND **RALPH BAER**'S **MAGNAVOX ODYSSEY** (1968) CAME PACKED WITH A REPLICA RIFLE THAT ALLOWED PLAYERS TO TAKE SHOTS AT TARGETS ONSCREEN.

BY THE 1970s, WITH PLAYERS FLOCKING TO ARCADES, IT WAS ONLY A MATTER OF TIME BEFORE SOMEONE PUSHED IT TOO FAR.

THAT DUBIOUS HONOUR WOULD GO TO **DEATH RACE** (1976), WHICH REQUIRED PLAYERS TO MOW DOWN HUMANOID 'GREMLINS' TO GAIN POINTS.

THE GAME SENT SHOCKWAVES ACROSS THE U.S. THE **NATIONAL SAFETY COUNCIL** BRANDED THE GAME 'SICK, SICK, SICK'.

'ON TV, VIOLENCE IS PASSIVE. IN THIS GAME A PLAYER TAKES THE FIRST STEP TO CREATING VIOLENCE. THE PLAYER IS NO LONGER JUST A SPECTATOR. HE'S AN ACTOR IN THE PROCESS.'

– **DR GERALD DRIESSEN** (BEHAVIOURAL PSYCHOLOGIST AT THE NATIONAL SAFETY COUNCIL)

BY THE EARLY 80s ANXIETIES WERE GROWING. POLITICIANS, DOCTORS AND PARENTS WERE WONDERING WHAT VIDEO GAMES WERE DOING TO THE PSYCHOLOGY OF THEIR PLAYERS.

SURGEON GEN... SEES DANGER... VIDEO GAMES

THEY ARE INTO IT BODY AND SOUL ... THERE'S NOTHING CONSTRUCTIVE IN THE GAMES ...

EVERYTHING IS ELIMINATE, KILL, DESTROY ...

SURGEON GENERAL DR C. EVERETT KOOP

YEAR ON YEAR, AS VIDEO GAME VIOLENCE MOUNTED IN INTENSITY AND REALISM, NEW MORAL PANICS WOULD TAKE THE MEDIA BY STORM.

MORTAL KOMBAT'S NOTORIOUS AND GRUESOME FATALITIES. DOOM'S DEMONIC GUNPLAY. MANHUNT'S SADISTIC EXECUTIONS.

SENATOR JOE LIEBERMAN

WE'RE TALKING ABOUT VIDEO GAMES THAT GLORIFY VIOLENCE AND TEACH CHILDREN TO ENJOY INFLICTING THE MOST GRUESOME FORMS OF CRUELTY IMAGINABLE.

AGAIN AND AGAIN, VIDEO GAMES WERE BLAMED FOR A PERCEIVED EPIDEMIC IN VIOLENCE IN SOCIETY.

BAN THES... EVIL GAM...

IT'S TELLING KIDS HOW TO KILL SOMEONE, AND IT USES VICIOUS, SADISTIC AND CRUEL METHODS TO KILL.

REPRESENTATIVE JOE BACA

AND SO, IN 1999, THE COLUMBINE MASSACRE PROVED THAT THEY WERE RIGHT TO PANIC.

YOUNG PEOPLE WERE BEING DRIVEN TO KILL BY VIDEO GAMES.

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BUT WERE THEY?

IT IS UNDENIABLE THAT VIDEO GAMES CAN BE EXTREMELY VIOLENT. **SIMON PARKIN** PUTS IT THIS WAY: 'FROM **SUPER MARIO** TO **CALL OF DUTY**, THE TRAIL OF DEAD WE VIRTUAL KILLERS LEAVE BEHIND IS OF GENOCIDAL PROPORTIONS.'

WHILE TO THE OUTSIDER, THIS VIOLENCE CAN SEEM GRATUITOUS IN THE EXTREME, MOST GAME PLAYERS ARE RELUCTANT TO ACCEPT THE IDEA THAT GAMES HAVE ANY BEARING ON THEIR OWN POTENTIAL FOR VIOLENCE.

SOCIOLOGIST AND ARCADE ADDICT **DAVID SUDNOW** PUT IT BEST, DESCRIBING THE APPEAL OF **MISSILE COMMAND** WAY BACK IN 1983:

NONE OF US WAS A WARMONGER. AND NEITHER WERE OUR KIDS.

BUT THE PACE OF THINGS. THE SPEED. THE FAST TWISTS AND TURNS. THE FIREWORKS. THE LUMINESCENCE.

LIKE CHILDREN PLAYING COPS AND ROBBERS OR THE GRANDMASTER PLAYING **CHESS**, FOR THE GAMER THE VIOLENCE OF VIDEO GAMES ISN'T REAL.

THESE ARE ACTS OF PLAY: CHALLENGES BEING OVERCOME, POINTS BEING SCORED.

FOR DECADES SOCIAL SCIENTISTS HAVE BEEN CONDUCTING RESEARCH INTO THE LINKS BETWEEN MEDIA VIOLENCE AND REAL-WORLD CRIME.

IN 2015, THE **AMERICAN PSYCHOLOGICAL ASSOCIATION** ANALYSED SEVERAL STUDIES, AND CONCLUDED THAT THERE WERE SIGNS THAT VIOLENT VIDEO GAMES HAVE THE POTENTIAL TO DECREASE EMPATHY AND INCREASE AGGRESSION IN PLAYERS.

CONSIDERING THE NUMBER OF GAME PLAYERS TODAY, YOU'D EXPECT A MEASURABLE RISE IN REAL-WORLD VIOLENCE. SEEMINGLY NOT ...

AS RESEARCHERS **PATRICK MARKEY** AND **CHRISTOPHER FERGUSON** DEMONSTRATE, THE RAPIDLY GROWING POPULARITY OF VIDEO GAMES SINCE THE 1990s HAS ACTUALLY COINCIDED WITH A STEADY DROP IN VIOLENT CRIME IN THE UNITED STATES.

IN FACT, RESEARCH SHOWS THAT WHEN GAMES LIKE **GRAND THEFT AUTO IV** (2007) ARE RELEASED THEY DON'T CORRESPOND WITH A RISE IN CRIME RATES, WHICH ARE MORE AFFECTED BY HOT WEATHER THAN ANYTHING ELSE.

MEANWHILE, ON AN INTERNATIONAL LEVEL, INCREASED VIDEO GAME CONSUMPTION DOES NOT CORRELATE WITH INCREASED CRIME RATES, WITH THE BIGGEST SPENDERS LIKE SOUTH KOREA AND JAPAN ENJOYING THE LOWEST CRIME RATES.

SUCH FINDINGS HAVE DONE LITTLE TO STEM THE TIDE OF ACCUSATIONS THAT FOLLOW THE FRESH WOUND OF A NEW MASS SHOOTING.

THERE EXISTS IN THIS COUNTRY, SADLY, A CALLOUS, CORRUPT AND CORRUPTING SHADOW INDUSTRY THAT SELLS AND STOWS VIOLENCE AGAINST ITS OWN PEOPLE THROUGH VICIOUS, VIOLENT VIDEO GAMES ...

WAYNE LaPIERRE, NRA SPOKESMAN

SOME, HOWEVER, SEE THE **NATIONAL RIFLE ASSOCIATION**'S ATTITUDE TO VIDEO GAME VIOLENCE AS A SMOKESCREEN, 'A SHABBY COVER-UP MEANT TO OBSCURE THE LITERAL SMOKING GUN.'

IN FACT, IN RECENT YEARS THE GUN INDUSTRY HAS BECOME QUITE COSY WITH THE GAMES INDUSTRY, WORKING TO LICENSE THEIR WEAPONS FOR USE IN BLOCKBUSTER TITLES LIKE **CALL OF DUTY** OR **BATTLEFIELD**.

GUN INDUSTRY LIAISON **RALPH VAUGHN** HAS SAID THAT 'VIDEO GAMES EXPOSE OUR BRAND TO A YOUNG AUDIENCE WHO ARE CONSIDERED POSSIBLE FUTURE OWNERS.'

IT SEEMS THE GUN INDUSTRY WANTS IT BOTH WAYS, BLAMING VIDEO GAMES FOR GUN VIOLENCE WHILE AT THE SAME TIME USING THEM TO MARKET THEIR DEADLY WARES TO A YOUNG AUDIENCE.

FOR PSYCHOLOGIST **KATHERINE NEWMAN**, THE SEARCH FOR A SINGLE ANSWER TO THE HORROR OF MASS SHOOTINGS IN THE U.S. IS FUTILE.

ARE YOU NEXT ?

BUT AS SHE ARGUES, FOR VULNERABLE AND OSTRACIZED YOUNG MEN, THE VIOLENT FANTASIES THAT MANY VIDEO GAMES AND MOVIES EXPLORE PROVIDE 'A CULTURAL SCRIPT THAT LINKS MANHOOD AND PUBLIC RESPECT WITH VIOLENCE'.

LOOKS LIKE IT'S TIME FOR ME TO GO POSTAL!

VIDEO GAMES DON'T CONVINCE YOUNG MEN TO KILL, NOR PROVIDE THEM WITH THE MEANS TO DO IT.

BUT WHEN THE RIGHT SET OF CIRCUMSTANCES LINE UP, VIOLENT MEDIA CAN PROVIDE THE SCRIPT THAT TELLS THEM THAT OPENING FIRE WILL SOLVE THEIR PROBLEMS AND BRING THEM THE RESPECT THEY CRAVE.

COLUMBINE HIGH SCHOOL

COLUMBINE HIGH SCHOOL
HOME OF THE
REBELS

WHILE TOUGHER GUN CONTROL WOULD LIKELY GO A LONG WAY TO MAKING MASS SHOOTINGS HARDER TO PULL OFF, IT WON'T SOLVE AMERICA'S DEEPER PROBLEMS.

OF YOUNG MEN LOSING THEMSELVES TO RAGE.

A CULTURE HYPNOTIZED BY VIOLENCE.

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PERHAPS VIDEO GAMES' PREDISPOSITION TOWARDS VIOLENCE SHOULD COME AS NO SURPRISE. FROM THE ROMAN GAME OF **LATRUNCULI** TO ANCIENT CHINESE **GO**, GAMES HAVE LONG BEEN USED BY MILITARY LEADERS TO BETTER UNDERSTAND WARFARE.

IN 19TH-CENTURY PRUSSIA, SMALL MODELS AND DETAILED LANDSCAPES WERE USED BY GENERALS TO REALISTICALLY PLAY OUT MILITARY STRATEGIES IN ADVANCE OF ACTUAL BATTLES.

KRIEGSPIEL WAS SO POPULAR WITH PRUSSIAN LEADERS THAT THE GAME WAS ISSUED TO EVERY REGIMENT AND EVERY MILITARY MAN WAS REQUIRED TO PLAY.
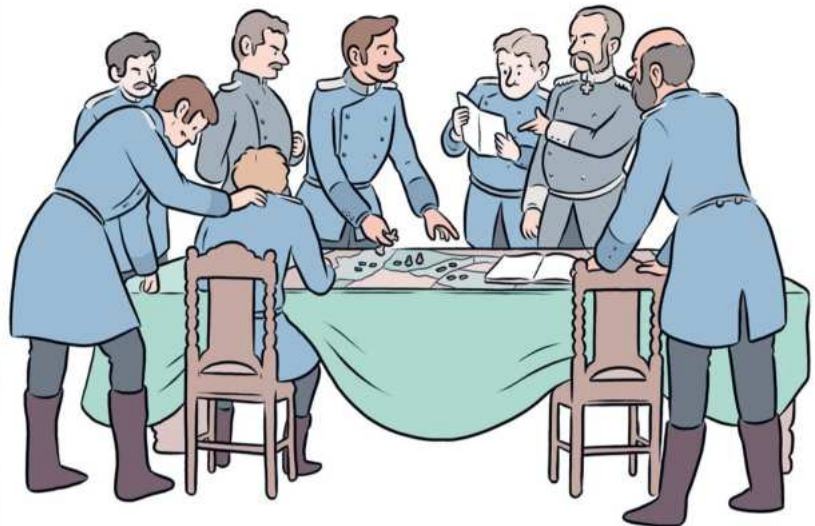
WIDELY CREDITED FOR THE COUNTRY'S BATTLEFIELD VICTORIES OVER AUSTRIA AND FRANCE IN 1866 AND 1870, THE GAME BECAME A HUGE HIT.

IN THE POST-WAR PERIOD THE GAME BECAME THE DELIGHT OF THE ARISTOCRACY, POPULARIZED BY H.G. WELLS'S **LITTLE WARS** RULEBOOK, RELEASED IN 1913.

OVER THE COMING DECADES THESE GAMES EVOLVED INTO TABLETOP WAR GAMES LIKE **RISK** (1957), THE FANTASY BATTLE GAME **WARHAMMER** (1983), AND STRATEGY VIDEO GAMES LIKE **COMMAND AND CONQUER** (1995) AND **XCOM: ENEMY UNKNOWN** (2012).

THE FIRST DIGITAL COMPUTERS WERE DEVELOPED IN THE CRUCIBLE OF WORLD WAR II. **KONRAD ZUSE** DEVELOPED THE WORLD'S FIRST PROGRAMMABLE COMPUTER TO HELP CALCULATE TRAJECTORIES FOR THE DEADLY V2 ROCKETS HAMMERING LONDON.
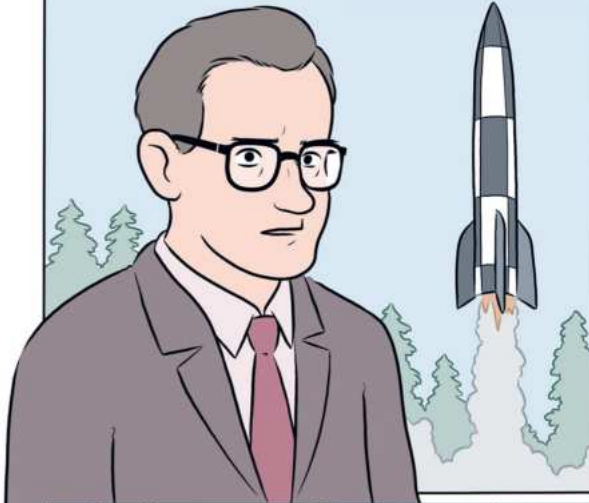
AND **HOWARD AIKEN'S HARVARD MARK I** WAS PUT TO WORK CRUNCHING NUMBERS FOR THE **MANHATTAN PROJECT**.
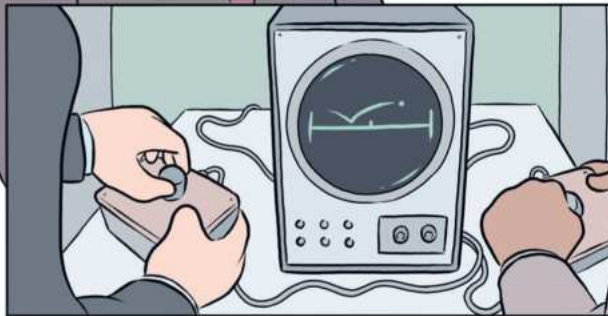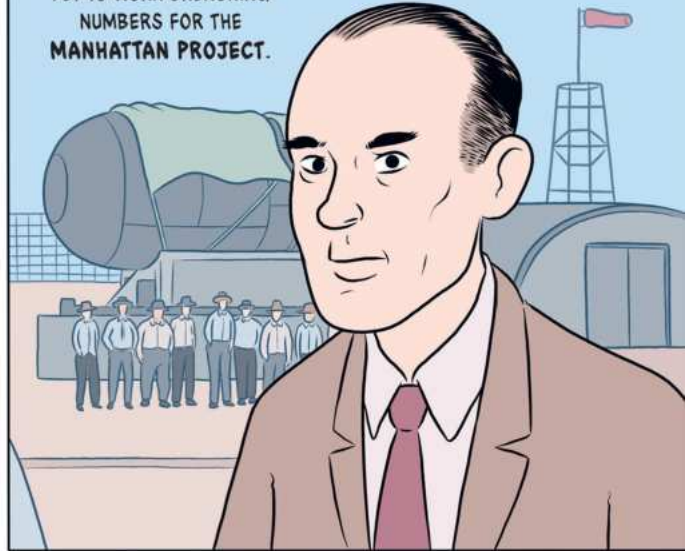
AFTER THE WAR, MILITARY FUNDING FLOODED INTO THE FLEDGLING FIELD OF COMPUTER SCIENCE, GIVING PEOPLE LIKE MANHATTAN PROJECT VETERAN **WILLIAM HIGINBOTHAM** AND MIT'S **TECH MODEL RAILROAD CLUB** ACCESS TO THE POWERFUL HARDWARE NECESSARY TO BRING THE FIRST VIDEO GAMES TO LIFE.

IT WASN'T LONG BEFORE MILITARY MINDS SAW THE MEDIUM'S POTENTIAL TO TRAIN NEW RECRUITS. IN 1980, **ATARI** WAS HIRED TO TURN BATTLEZONE'S FUTURISTIC TANK WARFARE INTO A 3D TRAINING SIMULATION FOR REAL-WORLD TANKS.

ED ROTBERG, THE GAME'S DESIGNER, WASN'T HAPPY.

I WAS NOT PLEASED. I SIMPLY DID NOT WANT TO WORK ON A PRODUCT THAT WOULD HELP PEOPLE LEARN HOW TO KILL OTHER PEOPLE.

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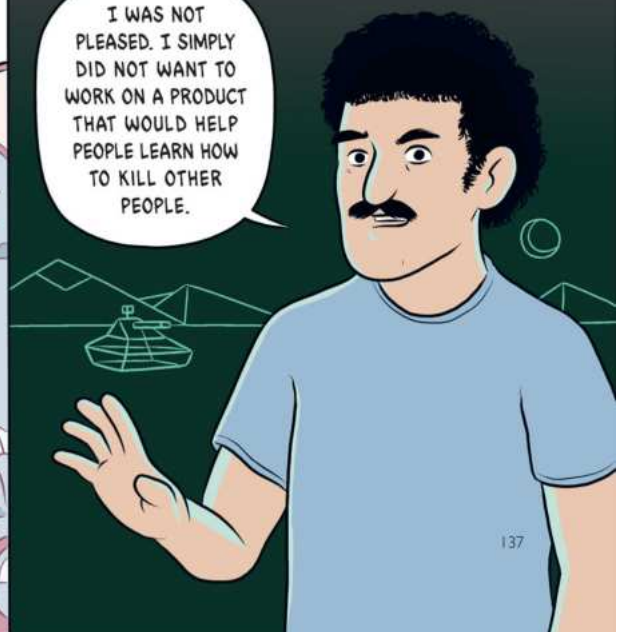
THIS TREND CONTINUED. BY THE 90s MEMBERS OF THE MILITARY WERE MODIFYING **DOOM II** (1994) TO CREATE **MARINE DOOM**, REPLACING THE MONSTERS WITH ENEMY SOLDIERS, AND USING IT TO TEACH RECRUITS SQUAD TACTICS AND URBAN WARFARE.

EVER SINCE, GAMES AND SIMULATIONS HAVE BECOME AN INCREASINGLY COMMON PART OF ARMY TRAINING, ALLOWING SOLDIERS TO PLAY OUT DANGEROUS SCENARIOS OR GET TO GRIPS WITH DRONES AND COMBAT ROBOTS, IN A SIMULATED ENVIRONMENT.
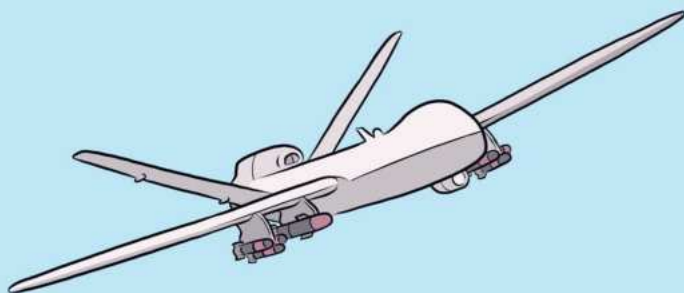
WHILE THESE TECHNIQUES SURELY SAVE MONEY AND (SOLDIERS') LIVES, FOR POLITICAL SCIENTIST **P. W. SINGER** THERE IS A GROWING UNEASE THAT 'REAL WARFARE IS TAKING ON THE LOOK AND FEEL OF A VIDEO GAME'.

ON THE BATTLEFIELD, WITH DRONES AND ROBOTS MANOEUVRED WITH ACTUAL **XBOX** CONTROLLERS, AND TARGETS VIEWED THROUGH A SCREEN, THE BOUNDARIES BETWEEN VIDEO GAMES AND REAL WARFARE ARE STARTING TO BLUR.

AS ONE DRONE PILOT PUTS IT:

IT'S LIKE A VIDEO GAME...

IT CAN GET A LITTLE BLOODTHIRSTY. BUT IT'S FUCKING COOL.

IF WAR GAMES COULD BE USEFUL IN THE MILITARY CLASSROOM, MAYBE THEY COULD ALSO BE USEFUL FOR RECRUITMENT.

I WANT YOU FOR U.S.ARMY

2002 SAW THE RELEASE OF **AMERICA'S ARMY**, A FREE-TO-PLAY TACTICAL SHOOTER DEVELOPED BY THE U.S. MILITARY THAT SOUGHT TO ATTRACT SOME OF THE HUGE AUDIENCES THAT WERE FLOCKING TO GAMES LIKE **MEDAL OF HONOR** (1999) AND **COUNTER-STRIKE** (2000).

THEIR GAMBLE PAID OFF. **AMERICA'S ARMY** NOT ONLY IMPROVED YOUNG PLAYERS' PERCEPTIONS OF THE MILITARY, IT BOOSTED RECRUITMENT MORE THAN ALL OTHER FORMS OF ARMY ADVERTISING COMBINED.

AMERICA'S ARMY IS FAR FROM ALONE IN ITS INTENT TO MAKE WAR APPEALING.

EACH NEW ITERATION OF **CALL OF DUTY** OR **BATTLEFIELD** BOASTS OF BETTER GRAPHICS, GREATER REALISM AND A MORE AUTHENTIC MILITARY EXPERIENCE, ACHIEVED BY DRAWING ON THE EXPERTISE OF ARMY VETERANS AND EVEN ACTIVE PENTAGON ADVISORS.

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THE CLAIMS OF REALISM THAT THESE GAMES SELL THEMSELVES ON ARE DEEPLY SUSPECT.

THEORIST **BRENDAN KEOGH** EXPLAINS THAT MILITARY SHOOTERS 'OBSCURE A MESSY REALITY WHERE BATTLEFIELDS ARE RARELY WITHOUT A CIVILIAN PRESENCE, PRECISION-GUIDED ORDNANCE IS RARELY PRECISE, AND WHERE BATTLE LINES CAN RARELY, IF EVER, BE NEATLY REDUCED TO "GOOD" AND "BAD" GUYS'.

FAR FROM BEING REALISTIC, DIGITAL BATTLEFIELDS OMIT THE TRAGIC REALITIES OF MODERN WARFARE, OFFERING A **SANITIZED** AND MORALLY CLEAR VISION IN LINE WITH MILITARISTIC SENSIBILITIES.

THIS VIOLENCE IS BLOODY, BUT DEVOID OF CONSEQUENCES. NO SCREAMING CASUALTIES. NO CHILD SOLDIERS. NO POST-TRAUMATIC STRESS DISORDER.

JUST BODIES 'HARD-CODED FOR DEATH', WHICH ARE FORGOTTEN AND DISAPPEAR AS SOON AS THE PLAYER'S BACK IS TURNED.

NOT ALL GAMES VIEW WARFARE IN SUCH A POSITIVE LIGHT. **BIOME COLLECTIVE**'S **KILLBOX** (2016) RE-CREATES THE EXPERIENCE OF A DRONE PILOT, OFFERING AN AERIAL VIEW OF A VILLAGE WHERE TINY DOTS MINGLE AND MOVE.

AMIDST STATIC AND CHATTER, THE COMMAND COMES IN. THE PLAYER SELECTS THEIR TARGET, PUSHES A BUTTON AND LAUNCHES A MISSILE. IT'S ALL SO EASY, SO CLEAN. SO DISCONNECTED.
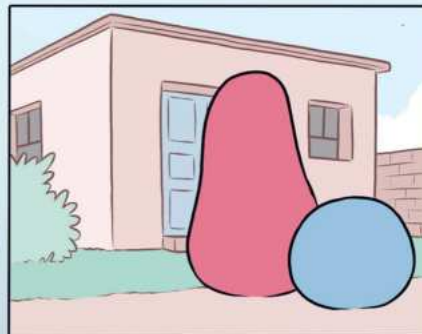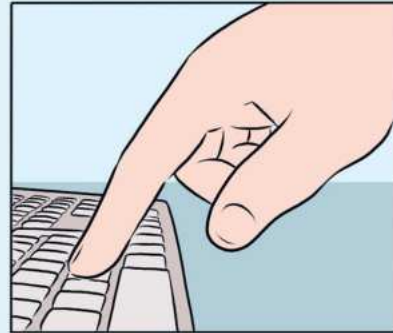
BUT THEN WE'RE REINCARNATED. WE'RE ONE OF THOSE DOTS. A CHILD DOWN IN THE VILLAGE, WAITING ANXIOUSLY. NEVER KNOWING WHEN THE BOMBS WILL DROP.

THIS WAR OF MINE (2014) STEPS AWAY FROM THE BATTLEFIELD TO EXPLORE THE EXPERIENCES OF CIVILIANS TRYING TO SURVIVE IN A BATTLE-SCARRED CITY.

I COULD EAT ANYTHING ...

I'M SO TIRED ...

SCAVENGING FOR FOOD, FIGHTING OFF INFECTION, AND AVOIDING CONFRONTATION AT ALL COSTS, THE GAME ESCHEWS THE GUNG-HO HEROICS OF MILITARY SHOOTERS TO OFFER AN EXPERIENCE WITH REAL EMOTIONAL WEIGHT.

THERE'S NO SHOOTING YOUR WAY OUT OF THIS ONE. INSTEAD YOU BIDE YOUR TIME, TENDING TO YOUR WAR-TORN DIGITAL DOLLHOUSE, AND THE LIVES INSIDE WORN THIN BY THE RAVAGES OF WAR.

SOME PLAYERS RESIST MAINSTREAM GAMING'S FIXATION ON VIOLENCE IN OTHER WAYS. THEORIST **GREG LASTOWKA** RIGHTLY STATES: 'JUST BECAUSE A GAME GIVES YOU A GUN DOESN'T MEAN YOU HAVE TO SHOOT IT.'

PACIFIST PLAYTHROUGHS SEE PLAYERS ATTEMPTING TO BUCK THE INTENT OF VIOLENT GAMES BY FINDING PEACEFUL WAYS TO PLAY.

IT CAN BE A GAME-BREAKING STRUGGLE. THESE GAMES ARE NOT DESIGNED WITH PACIFISM IN MIND. GAMES THAT FORCE PLAYERS TO BE VIOLENT ACTORS NO MATTER WHAT.

WITH HIS PROJECT **DEAD-IN-IRAQ** (2006), ARTIST **JOSEPH DELAPPE** SOUGHT NOT JUST PACIFISM BUT **PROTEST**.

IN ONLINE GAMES OF **AMERICA'S ARMY**, HE'D DROP HIS GUN, PULL UP THE CHAT FUNCTION AND BEGIN TYPING UP THE NAMES AND DATES OF DEATH OF AMERICAN SOLDIERS KILLED IN IRAQ.

THERE ARE PEOPLE ON THAT LIST OF NAMES ... WHO STARTED THEIR EXPERIENCE IN THE MILITARY PLAYING THIS GAME, AND NOW THEY ARE DEAD. AND THAT TO ME IS OUTRAGEOUS ...

IN A GAME DESIGNED TO SELL WAR TO YOUNG AMERICANS, IT WAS AN ACT OF DEFIANCE, DESIGNED TO CUT THROUGH THE JINGOISM AND REMIND PLAYERS OF THE COST OF WAR.

WHILE MANY HAVE WORRIED ABOUT THE VIOLENT NATURE OF GAMES, OTHERS HAVE BEEN CONCERNED ABOUT THEIR ADDICTIVE QUALITIES.

SINCE THE EARLIEST DAYS, THE SIREN CALL OF GAMING HAS SUCKED US IN. EVEN **ALBERT EINSTEIN** WORRIED ABOUT THE THRALL OF **CHESS**:

CHESS HOLDS ITS MASTER IN ITS OWN BONDS, SHACKLING THE MIND AND BRAIN SO THAT THE INNER FREEDOM OF THE VERY STRONGEST MUST SUFFER.

BUT VIDEO GAMES WERE SOMETHING ELSE. FOR MUSICIAN AND SOCIOLOGIST **DAVID SUDNOW**, **BREAKOUT** (1976) WAS LIKE A DRUG.

ATARI HAD IT, THE ULTIMATE ADRENALINE. LAY OUT A HALF DOZEN LINES FOR JUST A COUPLE OF BUCKS? A BARGAIN ... JUST HOOK UP, PLUG YOURSELF IN TILL YOU REACH THE RIGHT DOSAGE.

IN THE MIDDLE OF A GAME, OUR BODY CHEMISTRY CHANGES. BLOOD PRESSURE RISES. THE HEART BEATS FASTER. OUR BREATHING QUICKENS.

INSIDE THE BRAIN SPARKS FLY. UNDER AN MRI, SCIENTISTS CAN OBSERVE 'INTENSE ACTIVATION OF THE ADDICTION CIRCUITRY OF THE BRAIN WHEN GAMERS EXPERIENCED MOMENTS OF TRIUMPH'.
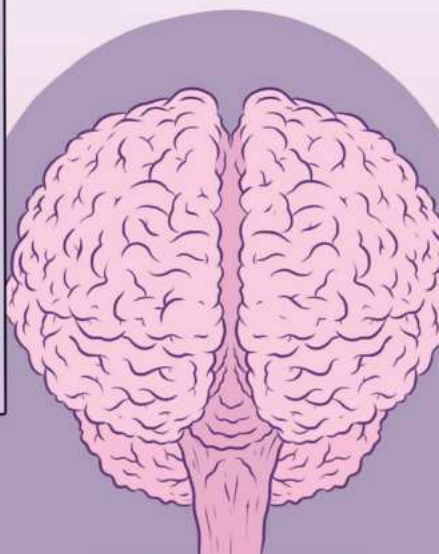
AND TODAY, WHAT WAS ONCE AVAILABLE ONLY IN ARCADES AND ON EXPENSIVE HOME CONSOLES CAN NOW BE ACCESSED ANYWHERE ON THE TINY COMPUTERS MOST OF US CARRY IN OUR POCKETS.

MOST PLAYERS CAN ATTEST TO IT.

THE WAY SOUND DRAINS OUT OF THE ROOM AND A WHOLE DAY DISAPPEARS INTO PLAY.

THE **TETRIS** SHAPES INVADING YOUR DREAMS.

THAT TINGLING AT THE TIPS OF YOUR FINGERS AS YOU JONES FOR YOUR NEXT HIT.

FOR ANTHROPOLOGIST **BRIAN SUTTON-SMITH**, ADDICTION IS IN GAMING'S VERY NATURE: 'ANY GOOD GAME IS ADDICTIVE. THAT'S WHAT GAMES ARE ABOUT. ONE THING ABOUT CHILDREN IS THAT THEY GROW OUT OF THEIR ADDICTIONS. ONE THING ABOUT ADULTS IS THEY DIE WITH THEM.'

IT'S A PREDICTION THAT HAS SADLY COME TRUE TIME AND AGAIN. EVER SINCE 1982, WHEN AN AMERICAN TEENAGER DIED OF A HEART ATTACK DURING A GAME OF **BERZERK** (1980), THE DEADLY CONSEQUENCES OF COMPULSIVE PLAY HAVE BEEN IN THE PUBLIC EYE.

ACROSS THE WORLD, MARATHON GAMING SESSIONS HAVE LED TO A NUMBER OF FATALITIES, WITH PLAYERS DROPPING DEAD IN THE MIDDLE OF 40- OR 50-HOUR SESSIONS.
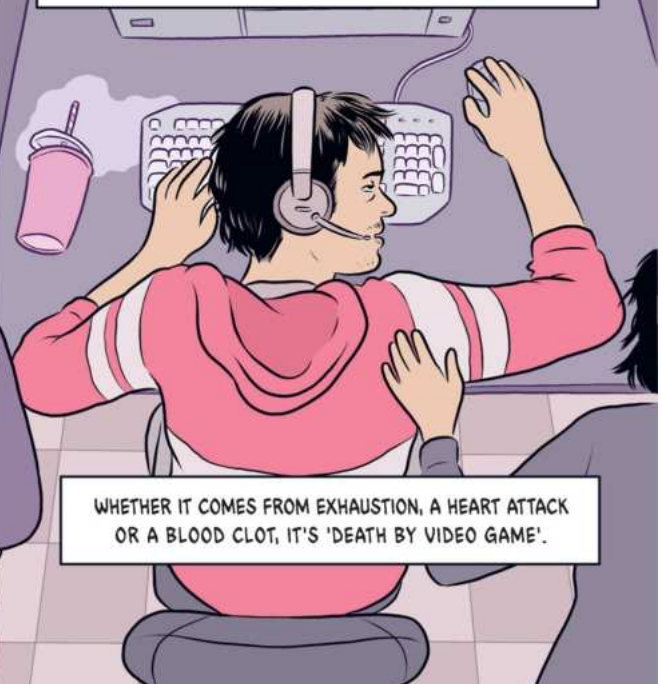
WHETHER IT COMES FROM EXHAUSTION, A HEART ATTACK OR A BLOOD CLOT, IT'S 'DEATH BY VIDEO GAME'.

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BUT EVEN WHEN GAMES DON'T PROVE DEADLY, THEY STILL HAVE THE CAPACITY TO RUIN LIVES. ADDICTS DRAW THE CURTAINS AND WITHDRAW FROM REALITY, THEIR REAL BODIES AND LIVES SUFFERING AS THEY POUR EVERYTHING INTO IMPROVING THEIR DIGITAL SELVES.

FOR HISTORIAN **JOHN BECKMAN**, IT CONTRIBUTES TO A TROUBLING TREND:

'GAMING FOSTERS PHYSICALLY ISOLATED CITIZENS, ATOMIZED CITIZENRY THAT FINDS IT HARDER ... TO BREAK FREE FROM THEIR SCREENS AND TO ENGAGE FACE-TO-FACE.'

AS ONE GAME ADDICT PUTS IT:

I DECIDED THAT THE PROGRESSION OF MY CHARACTER WAS MORE MEANINGFUL THAN THE PROGRESSION OF MYSELF IN REAL LIFE. IT'S SO MUCH MORE QUANTIFIABLE. IT'S SO VISIBLE. IT'S MORE ENTERTAINING THAN REAL LIFE.

IN 2018, THE **WORLD HEALTH ORGANIZATION** RECOGNIZED **GAMING DISORDERS** AS A MEDICAL REALITY.

Nintendo GAME BOY™
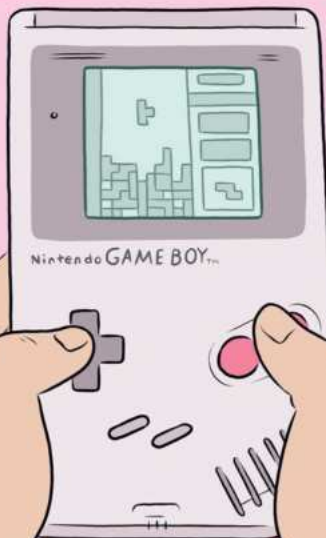
HOWEVER, PSYCHOLOGIST **CHRISTOPHER FERGUSON** BELIEVES ADDICTION TO GAMES MAY BE 'MERELY SYMPTOMATIC OF OTHER, UNDERLYING MENTAL HEALTH PROBLEMS AND THAT GAMING IS OFTEN USED AS A COPING MECHANISM FOR THESE PROBLEMS'.

IN HIS MIND, GAMES AREN'T THE PROBLEM BUT AN IMPERFECT SOLUTION FOR PEOPLE SUFFERING FROM SOCIAL ANXIETY OR DEPRESSION.

SELF-MEDICATION FOR THE DIGITAL AGE.

WHILE FERGUSON MIGHT WELL BE RIGHT, IN RECENT YEARS VIDEO GAME DESIGNERS HAVE BECOME INCREASINGLY ADEPT AT PULLING OUR STRINGS.

AT **ATARI** IN 1973 **CAROL KANTOR** BECAME THE GAMES INDUSTRY'S FIRST EVER **MARKET RESEARCHER,** DRIVING OUT TO ARCADES TO QUESTION PLAYERS ABOUT WHAT WORKED AND WHAT DIDN'T.

TODAY THE SITUATION IS FAR MORE COMPLEX. GAME DEVELOPERS HARVEST SWATHES OF DATA FROM MILLIONS OF PLAYERS, DRAWING ON TECHNIQUES PIONEERED BY THE GAMBLING INDUSTRY TO DEPLOY REWARD AND FRUSTRATION IN PERFECT MEASURE TO GUARANTEE WE KEEP COMING BACK FOR MORE.

JUST AS JUNK FOOD HITS THOSE EVOLUTIONARY SWEET SPOTS OF SALT, FAT AND SUGAR, MODERN VIDEO GAMES ARE DESIGNED TO TARGET OUR PLEASURE CENTRES, GIVING US QUICK AND EASY HITS OF DOPAMINE ON DEMAND.

LVL UP

FROM VIDEO GAMES TO SOCIAL MEDIA TO DATING APPS, OUR MINDS ARE BEING INCREASINGLY HACKED BY THE SOFTWARE WE CONSUME.

ACCORDING TO **TRISTAN HARRIS,** EX-**GOOGLE** EMPLOYEE AND SILICON VALLEY CRITIC, 'ALL OF US ARE JACKED INTO THIS SYSTEM. ALL OF OUR MINDS CAN BE HIJACKED. OUR CHOICES ARE NOT AS FREE AS WE THINK THEY ARE'.

IN RECENT YEARS, THE POTENTIAL FOR VIDEO GAMES TO SPILL OUT INTO THE REAL WORLD HAS ONLY INCREASED. **POKÉMON GO** (2016) LETS PLAYERS HUNT DOWN POKÉMON USING THEIR SMARTPHONE, HARNESSING **AUGMENTED REALITY** TO SUPERIMPOSE ANIMATED POKÉMON OVER LIVE FOOTAGE CAPTURED BY THEIR PHONE'S CAMERA.

AT THEIR BEST, GAMES LIKE THESE HAVE AN AMAZING POWER TO FOSTER A MORE PLAYFUL SOCIETY, BRING PEOPLE OUT OF THEIR SHELLS AND INVEST OUR EVERYDAY SPACES WITH A PLAYFUL, MYTHICAL ATMOSPHERE.
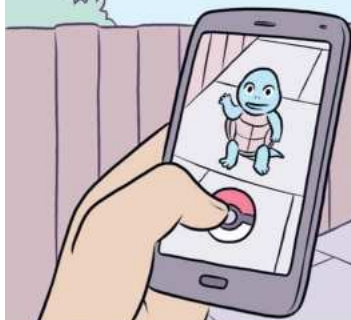
BUT THERE IS ALSO A DARK SIDE. WITHIN DAYS OF ITS RELEASE, STORIES EMERGED OF **POKÉMON GO** CRASHING RUDELY INTO REALITY.

Driver in Japan Playing Pokémon Go Kills Pedestrian
— New York

Woman discovers body while playing 'Pokémon Go'
—USA Toda

Armed robbers use mobile game to lure players into trap
The Guardian

Man Playing 'Pokemon Go' Stabbed

DEVELOPED BY GOOGLE START-UP **NIANTIC, POKÉMON GO** DEMONSTRATES SILICON VALLEY'S ALARMING ABILITY TO INFLUENCE NOT JUST VIRTUAL BEHAVIOURS BUT REAL ONES TOO.
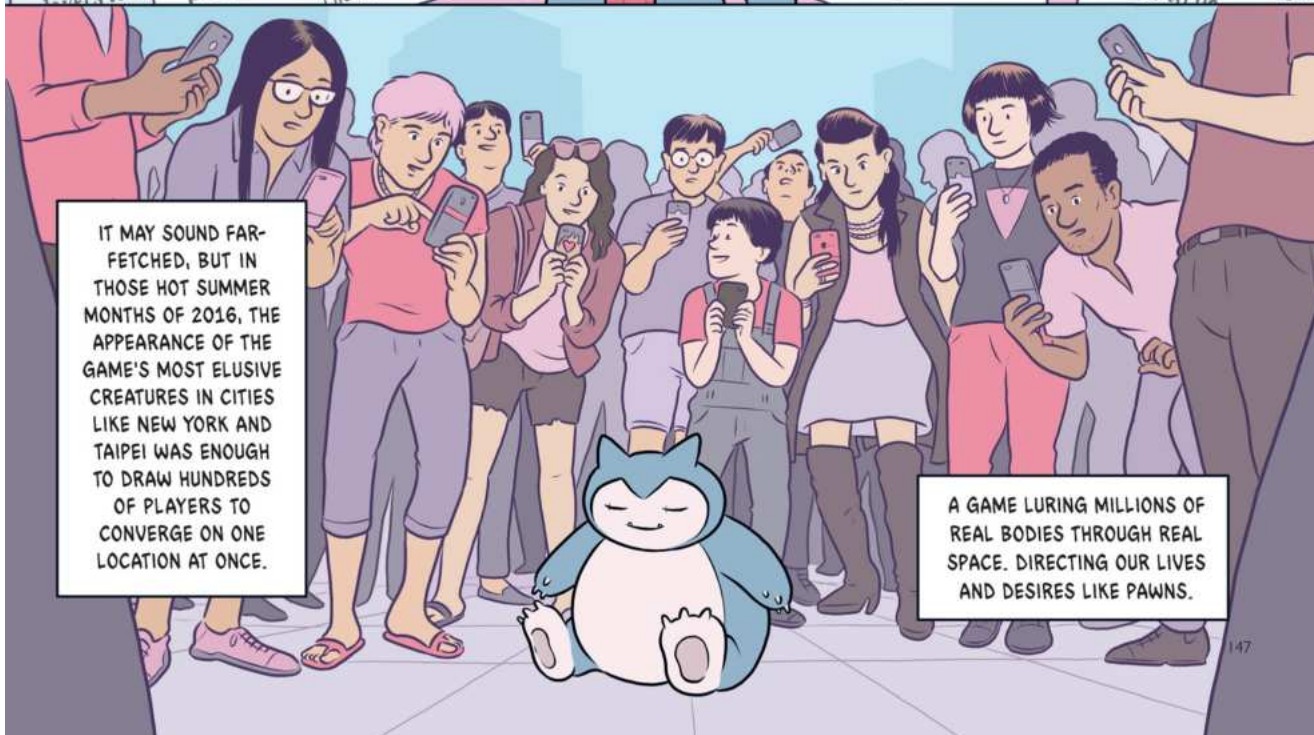
IT MAY SOUND FAR-FETCHED, BUT IN THOSE HOT SUMMER MONTHS OF 2016, THE APPEARANCE OF THE GAME'S MOST ELUSIVE CREATURES IN CITIES LIKE NEW YORK AND TAIPEI WAS ENOUGH TO DRAW HUNDREDS OF PLAYERS TO CONVERGE ON ONE LOCATION AT ONCE.

A GAME LURING MILLIONS OF REAL BODIES THROUGH REAL SPACE. DIRECTING OUR LIVES AND DESIRES LIKE PAWNS.

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THE LURE OF GAMES CAN PROVE SO POWERFUL THAT IT CAN EVEN AFFECT REAL-WORLD ECONOMIES.

IN 2007, THE CHINESE GOVERNMENT HAD TO STEP IN AFTER A VIRTUAL CURRENCY FOR SOCIAL MEDIA AND GAMES STARTED FINDING ITS WAY INTO REAL-WORLD TRANSACTIONS, DRIVING DOWN THE VALUE OF THE CHINESE YUAN.

MEANWHILE, MANY MAKE A CAREER OF PLAYING GAMES, GENERATING HUGE VIEWING FIGURES AND RISING TO THE LEVEL OF CELEBRITY FOR THEIR ENTERTAINING PERFORMANCES ON **YOUTUBE** OR **TWITCH**.

GAME TOURNAMENTS TODAY COMPETE WITH THE LARGEST SPORTING EVENTS IN TERMS OF VIEWERSHIP. IN 2018, THE **LEAGUE OF LEGENDS** WORLD CHAMPIONSHIP FINALS REACHED 100 MILLION VIEWERS ONLINE, MORE THAN THE NUMBER WHO WATCHED THAT YEAR'S SUPERBOWL FINAL.
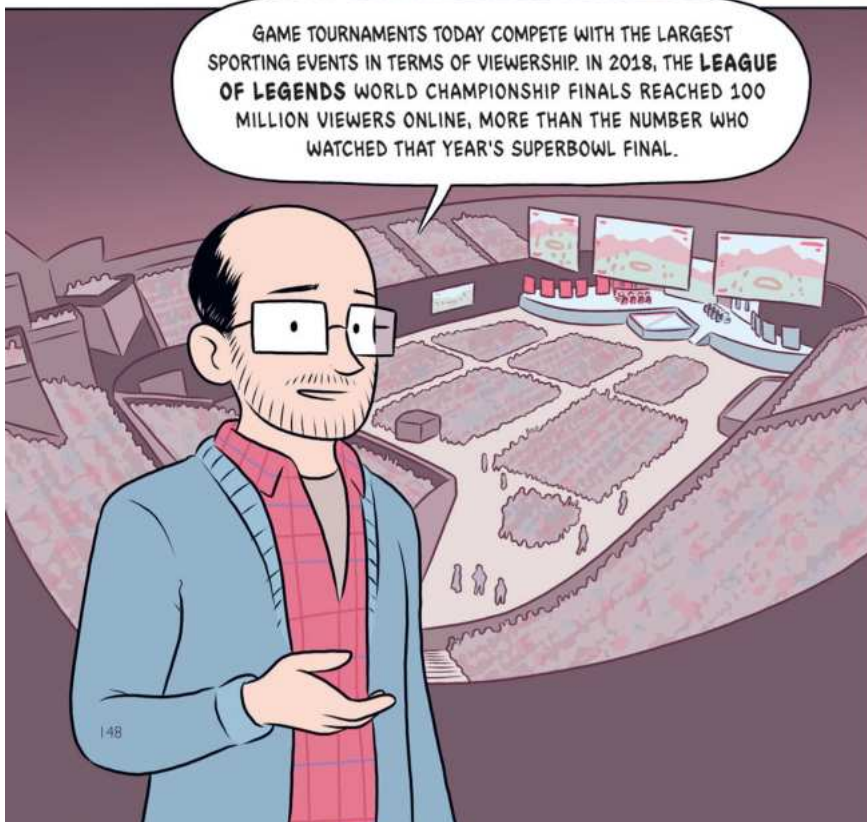
FOR A SKILLED AND LUCKY FEW, PROFESSIONAL GAMEPLAY CAN LEAD TO BIG MONEY, WITH PRIZES ROCKETING INTO THE MULTI-MILLIONS OF DOLLARS IN RECENT YEARS.

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BUT ELSEWHERE A MORE MUNDANE FORM OF PLAY-WORK EXISTS. FROM ROMANIA TO CHINA, ECONOMICALLY PRECARIOUS WORKERS ARE EMPLOYED BY 'GOLD FARMS' TO EARN CURRENCY, ITEMS OR EXPERIENCE POINTS TO SELL ON TO MORE WEALTHY PLAYERS.
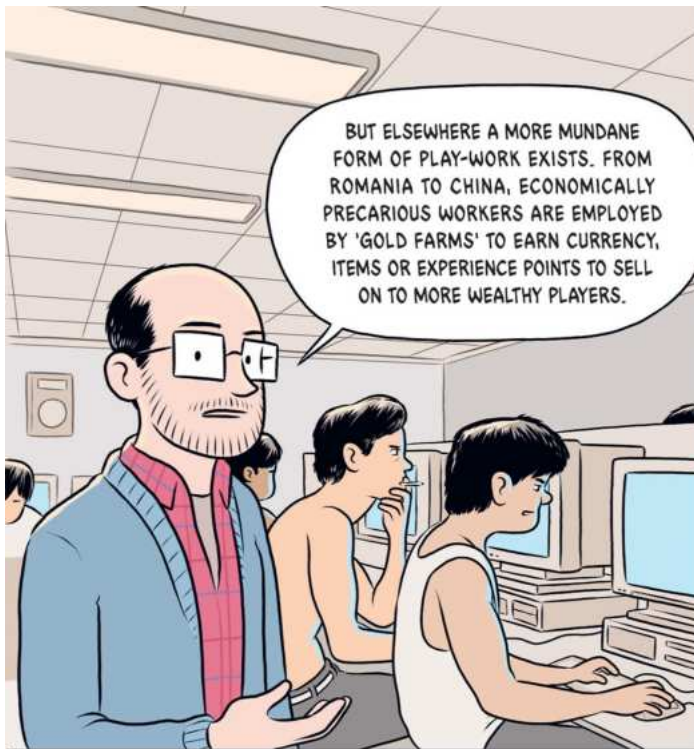
IN MANY CASES THESE ARE DIGITAL SWEATSHOPS, WHERE PEOPLE WORK 12-HOUR DAYS, SLEEP ON SITE, AND EARN BETWEEN U.S.$40 AND U.S.$200 A MONTH.

WORKING IN THE VIRTUAL WORLD, THEY OFTEN FACE TARGETED RACIAL HARASSMENT, WITH ANGRY MOBS MASSACRING GOLD FARMERS IN THEIR VIRTUAL WORKPLACE.

YET, AS RESEARCHER **GE JIN** HAS ARGUED, THESE WORKERS OFTEN LOVE THEIR JOB: 'IN CONTRAST TO THEIR IMPOVERISHED REAL LIVES, THEIR VIRTUAL LIVES GIVE THEM ACCESS TO POWER, STATUS AND WEALTH WHICH THEY CAN HARDLY IMAGINE IN REAL LIFE.'

IT'S A COMPLEX SITUATION. A STRANGE INTERSECTION OF CAPITALIST EXPLOITATION AND ENTERTAINMENT, WHERE 'EXPLOITATION IS ENTANGLED WITH EMPOWERMENT AND PRODUCTIVITY IS ENTANGLED WITH PLEASURE.'

FOR JIN THESE GOLD FARMERS ARE IN SOME SENSE 'A NEW KIND OF IMMIGRANT WORKERS, DISEMBODIED THROUGH THE INTERNET, THEN REEMBODIED ON A FOREIGN TERRITORY AS THE MYTHICAL WARRIORS, MAGICIANS OR PRIESTS — VIRTUAL BODIES THAT ARE THE BREAD EARNERS FOR REAL BODIES.'

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THE TARGETED HARASSMENT THESE GOLD FARMERS FACE IS NOTHING NEW, AND THERE ARE UNTOLD NUMBERS OF PLAYERS WHO FACE EXCLUSION AND ABUSE JUST FOR SETTING FOOT IN THE WORLD OF GAMES.

ON A DAILY BASIS, WOMEN FACE SEXISM, HARASSMENT AND THREATS OF SEXUAL VIOLENCE IF THEY DARE OPENLY IDENTIFY AS FEMALE IN ONLINE GAMES.

MIKE SHOLARS DESCRIBES HOW HE WAS CONFRONTED WITH RACIST ABUSE PLAYING GAMES AT JUST 12 YEARS OLD, PUTTING HIM OFF PLAYING FOR YEARS. 'I KNEW THAT SOMEWHERE IN THE WORLD, SOMEONE WANTED TO MAKE ME FEEL LESS THAN HUMAN.'

AND FOR JOURNALISTS AND GAME DESIGNERS WHO DARE TO CHALLENGE THE ORTHODOXY THAT GAMES ARE A WHITE, MALE SPACE, COME COORDINATED CAMPAIGNS OF DEATH THREATS AND DOXXING.

IT IS CLEAR THAT AN INGRAINED CULTURE OF MISOGYNY, QUEERPHOBIA, ABLEISM AND RACISM UNDERPIN THESE TOXIC BEHAVIOURS.

BUT THE FEROCITY WITH WHICH CERTAIN GAMERS POLICE GAME SPACES MAY WELL ORIGINATE IN THE NATURE OF PLAY ITSELF ...

A QUALITY OF PLAY THAT CULTURAL HISTORIAN **JOHAN HUIZINGA** DESCRIBES AS 'THE FEELING OF BEING "APART TOGETHER"'.

AS HUIZINGA ARGUES, PLAY PROVIDES THE FEELING 'OF SHARING SOMETHING IMPORTANT, OF MUTUALLY WITHDRAWING FROM THE REST OF THE WORLD AND REJECTING THE USUAL NORMS ... IT LOVES TO SURROUND ITSELF WITH AN AIR OF SECRECY ... THIS IS FOR US, NOT FOR THE "OTHERS".'

WHILE THESE ARE SOME OF THE MOST PLEASURABLE ELEMENTS OF PLAY, IT CAN EASILY TURN TOXIC.

AROUND THE MID-90s, WHEN GAMES STARTED BEING MARKETED MORE AGGRESSIVELY IN THEIR DIRECTION, SOME MEN CONVINCED THEMSELVES THAT VIDEO GAMES WERE **THEIRS** AND **THEIRS ALONE**.

VIEWING GAMES AS WHAT RESEARCHERS **JENNIFER DeWINTER** AND **CARLY KOCUREK** CALL 'A LAST BASTION OF HOMOSOCIAL MALE SPACE', THEY BEGAN POLICING THE BOUNDARIES OF WHO COULD AND COULDN'T PLAY GAMES WITH INCREASING FEROCITY.

SUBJECTING SUPPOSED 'INCOMERS' TO ABUSE THAT WAS UNCHALLENGED OR ENCOURAGED BY THEIR PEERS.

TODAY, WITH DIVERSE NEW VOICES IN GAME DESIGN FINALLY FINDING A PLATFORM, AND NEW AUDIENCES DISCOVERING AN INTEREST IN A MEDIUM THAT HAD LONG EXCLUDED THEM, THE ATTITUDES OF SOME PLAYERS TO THESE SUPPOSED 'OUTSIDERS' HAS ONLY HARDENED.

PLAYERS FOR WHOM THE GROWING EQUALITY AND VISIBILITY OF OTHERS FEELS LIKE OPPRESSION.

BROWN ARGUES THAT PLAY IS ACTUALLY **CRUCIAL** FOR OUR MENTAL WELLBEING: 'WHEN PLAY IS DENIED OVER THE LONG TERM, OUR MOOD DARKENS. WE LOSE OUR SENSE OF OPTIMISM AND WE BECOME ANHEDONIC, OR INCAPABLE OF FEELING SUSTAINED PLEASURE.'

THIS CAN BE ESPECIALLY TRUE IN PRISONS, WHERE INMATES ARE OFTEN DENIED ACCESS TO CONVENTIONAL ROUTES TO GOOD MENTAL WELLBEING.

FOR SOME INMATES, ROLE-PLAYING GAMES LIKE **DUNGEONS & DRAGONS** OFFER A WAY TO BUILD RESILIENCE AND BOLSTER THEIR MENTAL HEALTH, AT TIMES EVEN BRINGING RIVAL GANG MEMBERS AROUND THE SAME TABLE IN THE SPIRIT OF PLAY.

AS ONE EX-INMATE PUTS IT:

I'VE TAUGHT MURDERERS, GANG BANGERS, AND STRAIGHT UP NEO-NAZIS TO COME TOGETHER AND WORK AS A TEAM ... I BELIEVE THAT GAMES LIKE **D&D** CAN BE A POWERFUL TOOL TO INSPIRE CREATIVITY, TO PROVIDE A MEANS OF ESCAPE, AND TO GIVE THE VILIFIED AN OPPORTUNITY TO BE THE 'GOOD GUY' THAT THE WORLD IN WHICH WE LIVE RARELY DOES.

IN SOME PRISONS IN THE U.S. THE GAME IS BANNED, BUT THAT DOESN'T STOP PLAY. INMATES CRAFT PLAY PIECES AND DICE OUT OF PENCIL STUBS, PAPERCLIPS AND USED BATTERIES — BRINGING THE GAME TO LIFE WITH THEIR IMAGINATION AND WHATEVER COMES TO HAND.

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WHETHER IT'S **CHESS** FOSTERING BONDS ON THE SILK ROADS BETWEEN EUROPE AND CHINA, TEENS CRAMPED ROUND AN ARCADE CABINET BLASTING ALIENS, OR A FAMILY BONDING OVER A COOPERATIVE GAME OF **OVERCOOKED** (2016), PLAY HAS A CRUCIAL ROLE IN BRINGING US TOGETHER. PHYSICALLY AND EMOTIONALLY.

OVER THE YEARS, MILLIONS HAVE FLOCKED TO GAMES LIKE **SECOND LIFE** (2003), **WORLD OF WARCRAFT** AND **EVE ONLINE** (2003) TO COME TOGETHER IN MASSIVELY MULTIPLAYER ONLINE SPACES.

TO IMMERSE THEMSELVES IN A SHARED FANTASY.

TO BUILD SOMETHING **MEANINGFUL** TOGETHER.

SHARED PLAY EXPERIENCES EMERGE EVEN IN THE WORST OF TIMES.

AS WRITER **MAXWELL NEELY-COHEN** DOCUMENTS, IN THE MONTHS BEFORE THE 2006 LEBANON WAR, ISRAELI SOLDIERS AND HEZBOLLAH FIGHTERS WOULD REGULARLY MEET TOGETHER ONLINE IN GAMES OF **COUNTER-STRIKE**, FIGHTING WHAT HE DESCRIBES AS A 'WAR WITHOUT TEARS'.

LIKE THE SOLDIERS ON THE BATTLEFIELDS OF WORLD WAR I WHO DOWNED WEAPONS ONE NIGHT TO PLAY FOOTBALL IN THE MIDDLE OF NO-MAN'S LAND, THESE GAMES MAY NOT END WAR, BUT THEY ACKNOWLEDGE THE PLAYERS' SHARED HUMANITY.

BUILDING BRIDGES. SPARING AN EXCHANGE OF BULLETS, IF ONLY FOR ONE NIGHT.

IN **JENOVA CHEN**'S **JOURNEY** (2012) THE PLAYER CROSSES A VAST DESERT
TOWARDS A DISTANT MOUNTAIN. IT'S A DESOLATE, LONELY PLACE.
AN ISOLATED DIGITAL LANDSCAPE WHERE WE WALK ALONE.

BUT SOMETIMES ANOTHER TRAVELLER JOINS YOU. NOT A COMPUTER CONTROLLED CHARACTER, BUT ANOTHER HUMAN, CONNECTED TO YOU SILENTLY AND ANONYMOUSLY FROM SOMEWHERE OUT THERE IN THE REAL WORLD.
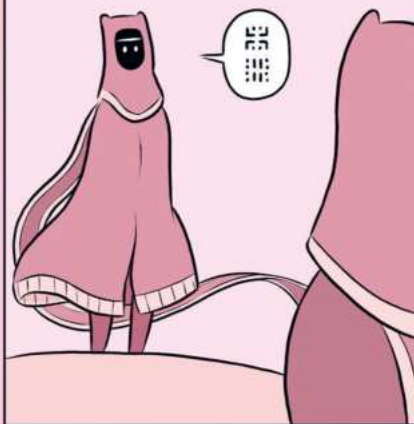
IT'S THESE MOMENTS THAT MAKE **JOURNEY** SOMETHING TRULY SPECIAL.

IN AN ATOMIZED SOCIETY, CALLOUSED BY AN INCREASINGLY HOSTILE SOCIAL MEDIA ENVIRONMENT, THE GAME OFFERS US A CHANCE TO CONNECT WITH ANOTHER HUMAN IN A WAY THAT IS TOUCHING AND MEANINGFUL AND UNPROBLEMATIC.

IT'S A GAME THAT MAKES THE WORLD FEEL SIGNIFICANTLY SMALLER.
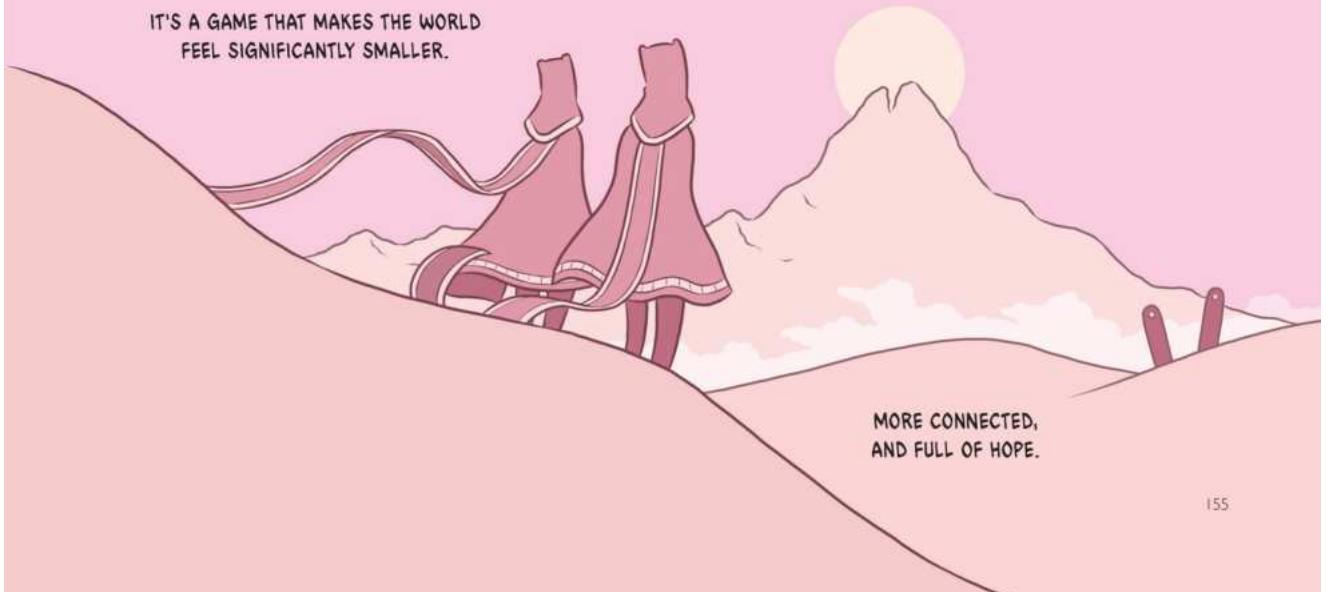
MORE CONNECTED, AND FULL OF HOPE.

WITH ORIGINS IN OUR MOST PRIMAL NATURE, THIS IS A MEDIUM STILL IN ITS INFANCY, AND REVOLUTIONS IN PLAY ALWAYS LIE JUST AROUND THE CORNER.

BUT WHATEVER COMES, WHAT IS CERTAIN IS THAT PLAY WILL CONTINUE.

WE'D BETTER HOPE SO.

IN A WORLD THAT RUMBLES FORWARD IN SUCH AN UNCONTROLLABLE MANNER, OUR PLAYFUL NATURE, OUR LOVE OF GAMES, MAY BE THE VERY THING THAT ALLOWS US TO BUILD A FUTURE THAT WORKS.
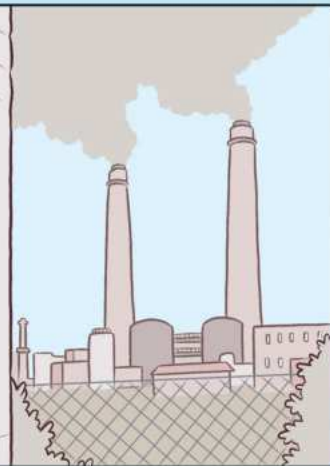
A FUTURE WORTH PLAYING IN.

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1997.
NEW YORK CITY.
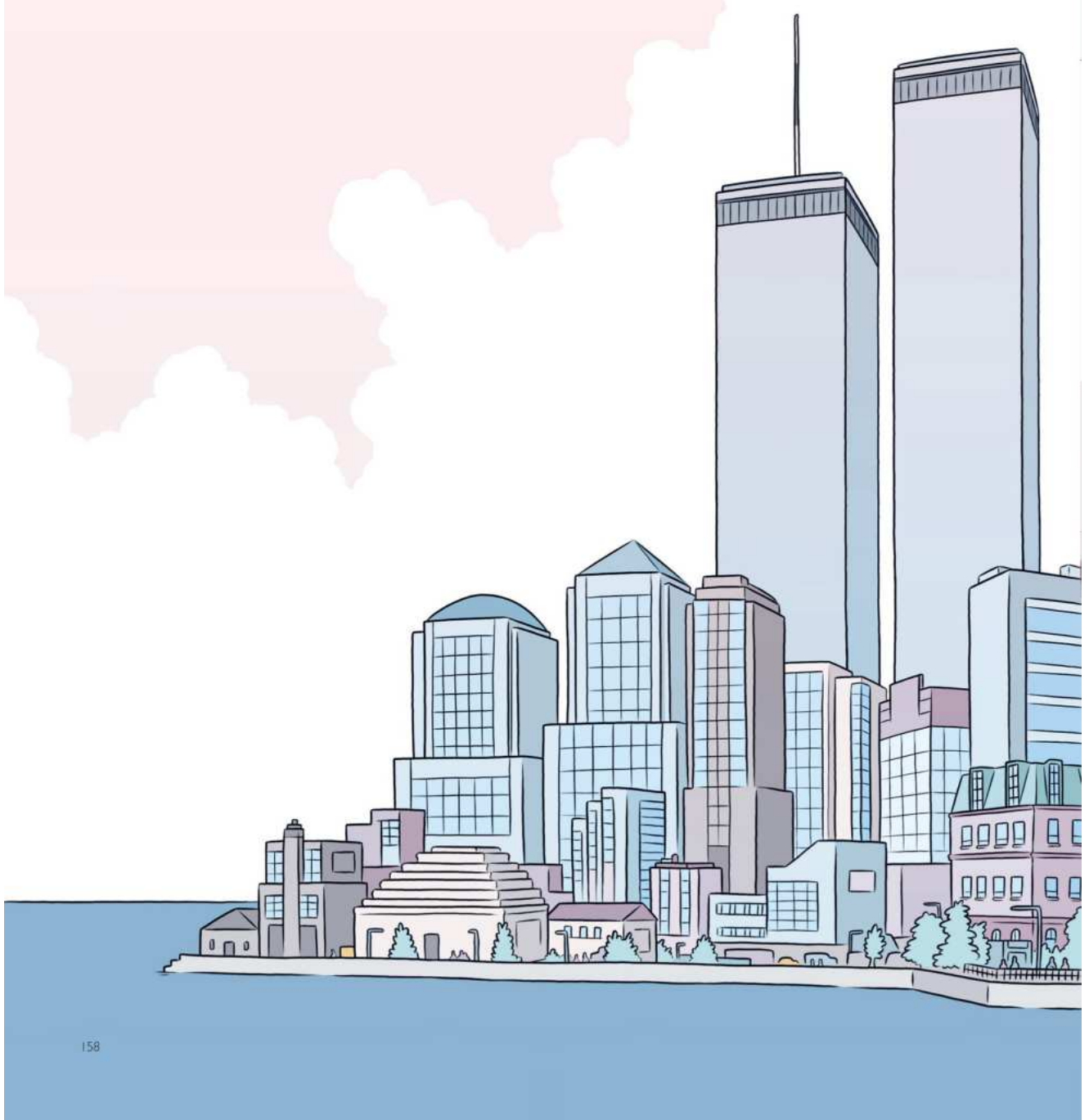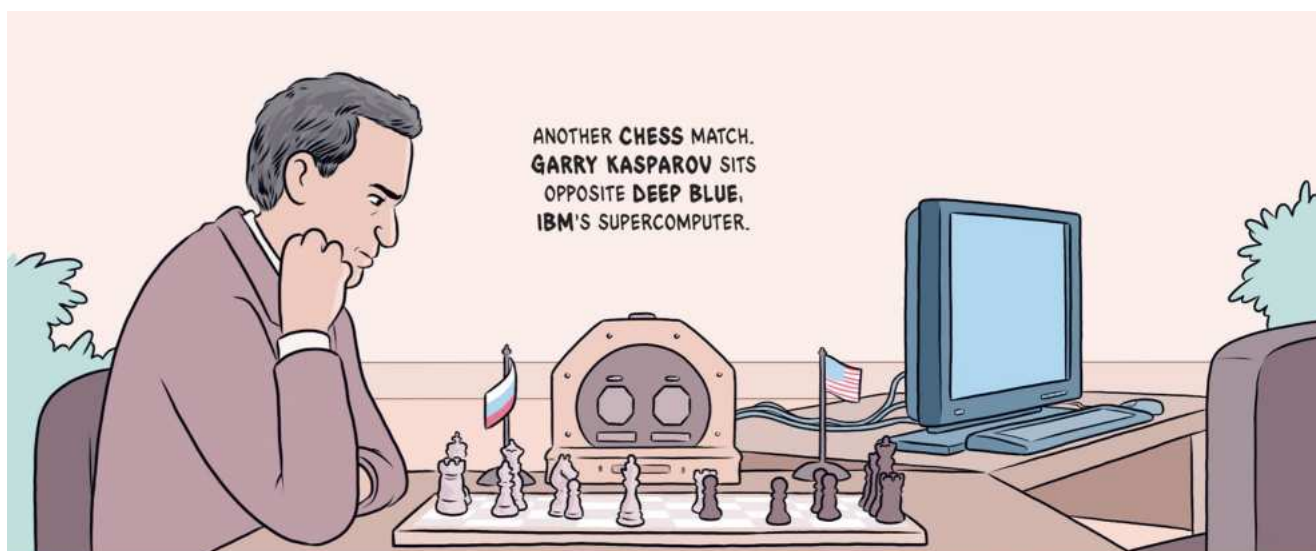
ANOTHER **CHESS** MATCH. **GARRY KASPAROV** SITS OPPOSITE **DEEP BLUE**, **IBM**'S SUPERCOMPUTER.
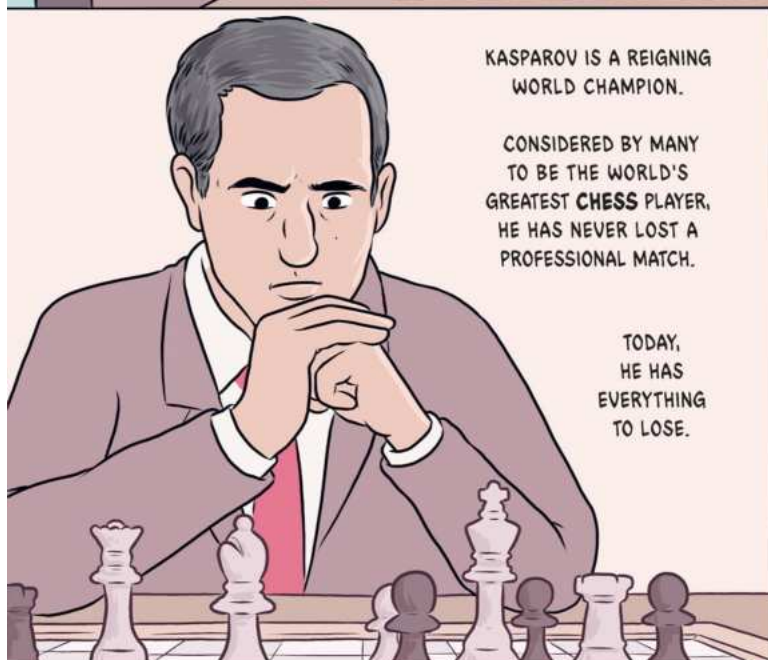
KASPAROV IS A REIGNING WORLD CHAMPION.

CONSIDERED BY MANY TO BE THE WORLD'S GREATEST **CHESS** PLAYER, HE HAS NEVER LOST A PROFESSIONAL MATCH.

TODAY, HE HAS EVERYTHING TO LOSE.
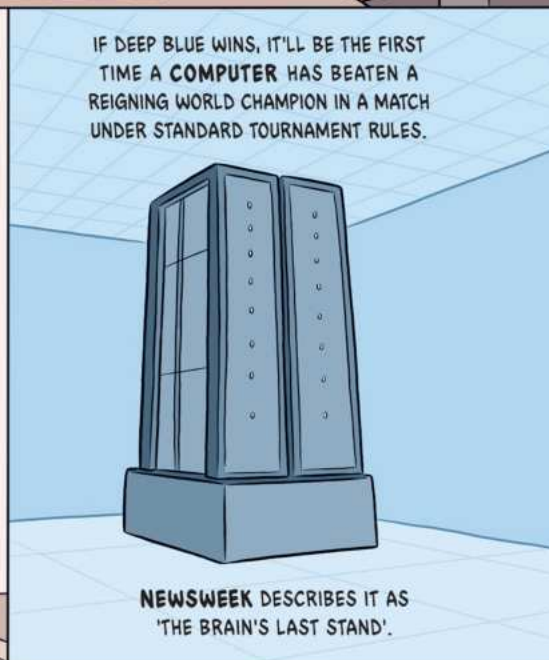
IF DEEP BLUE WINS, IT'LL BE THE FIRST TIME A **COMPUTER** HAS BEATEN A REIGNING WORLD CHAMPION IN A MATCH UNDER STANDARD TOURNAMENT RULES.

NEWSWEEK DESCRIBES IT AS 'THE BRAIN'S LAST STAND'.

THE CLOCK TICKS.

HE MAKES HIS MOVE.

BUT IT'S CLEAR THINGS ARE GOING TO END BADLY.

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KASPAROV'S DEFEAT IN THE SIXTH ROUND WAS A SHOT HEARD AROUND THE WORLD.

ABLE TO CALCULATE 200 MILLION POSITIONS A SECOND, A COMPUTER HAD BEATEN THE FINEST MIND IN **CHESS** THROUGH SHEER BRUTE FORCE.

WHAT HAD STARTED WITH **VON KEMPELEN**'S **MECHANICAL TURK**, **LOVELACE** AND **BABBAGE**'S **ANALYTICAL ENGINE** AND **TURING**'S **TUROCHAMP** HAD COME TO FRUITION. DECADES OF WORK BY SCIENTISTS AND PROGRAMMERS HAD FINALLY PAID OFF.

KASPAROV WAS DEVASTATED, ACCUSING IBM OF PROVIDING DEEP BLUE WITH A 'HAND OF GOD' WHEN ONE OF ITS MOVES DISPLAYED UNCHARACTERISTIC CREATIVITY.

IT WOULD TURN OUT THAT THIS WAS NOT A HUMAN INTERLOPER, AS KASPAROV ASSUMED, BUT ACTUALLY A **MALFUNCTION**. DEEP BLUE'S MOMENT OF CREATIVITY WAS A MISTAKE. A GLITCH IN ITS PROGRAMMING.

NOT ONLY DID DEEP BLUE DEFEAT THE WORLD'S GREATEST **CHESS** PLAYER THAT DAY. FOR A BRIEF MOMENT, IT PASSED THE TURING TEST AS WELL.

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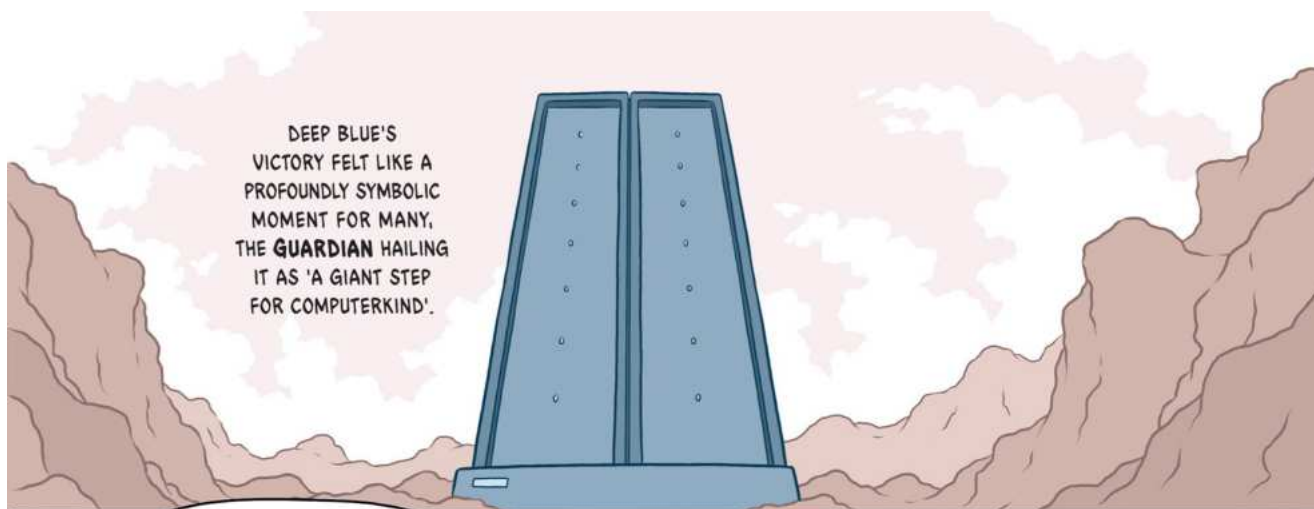
DEEP BLUE'S VICTORY FELT LIKE A PROFOUNDLY SYMBOLIC MOMENT FOR MANY, THE **GUARDIAN** HAILING IT AS 'A GIANT STEP FOR COMPUTERKIND'.

IT WAS UNDENIABLY A LANDMARK IN MACHINE LEARNING AND COMPUTING POWER, PART OF A PROJECT TO DEVELOP ARTIFICIAL INTELLIGENCE THAT CONTINUES TO AMAZE EVERY YEAR.

IN 2011, IBM'S LANGUAGE PROCESSING SYSTEM **WATSON** LEARNED TO PLAY THE GAMESHOW **JEOPARDY**, BEATING PREVIOUS HUMAN CHAMPIONS TO COLLECT A $1 MILLION PRIZE.

$24,000 $77,147 $21,600
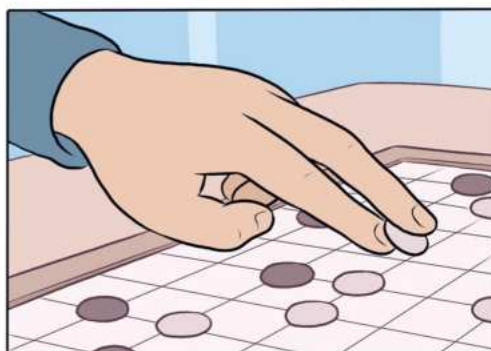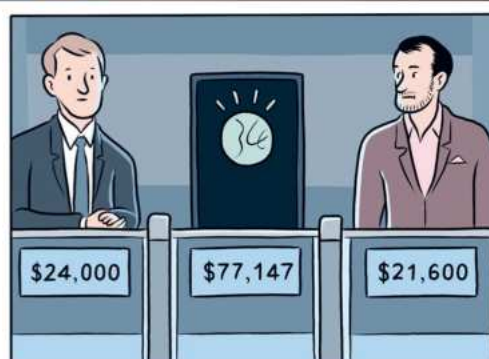
AND IN 2017, GOOGLE'S SELF-TAUGHT **ALPHAZERO** BECAME CAPABLE OF DEFEATING A HUMAN **GO** GRANDMASTER JUST THREE DAYS AFTER BEING SWITCHED ON.
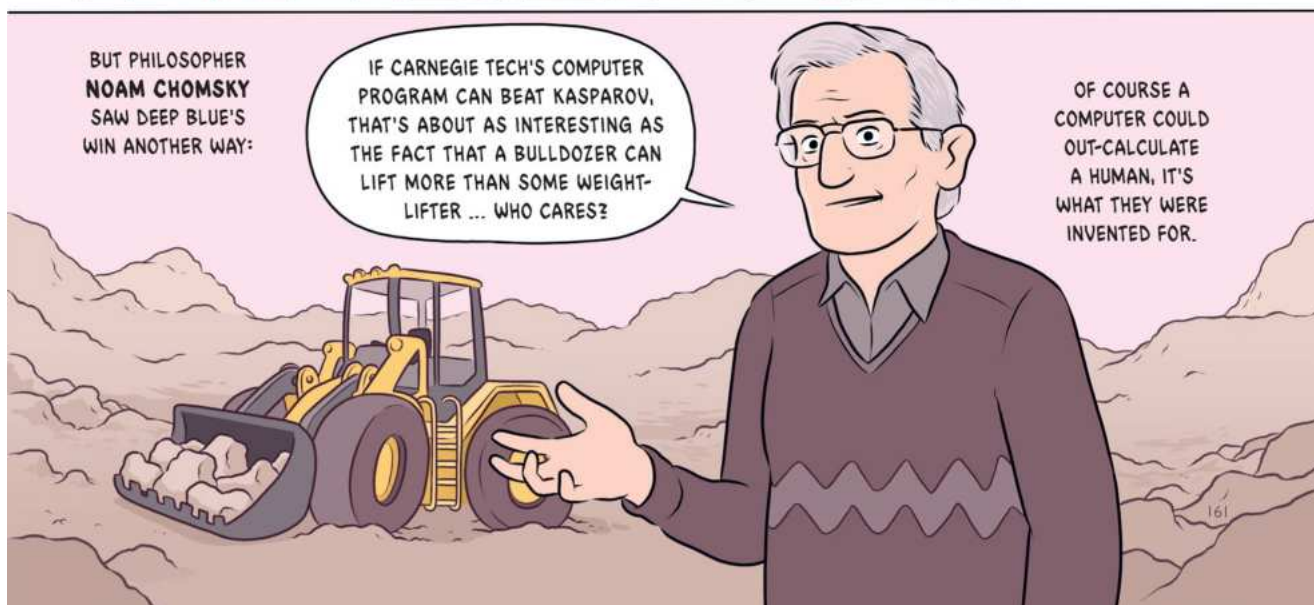
BUT PHILOSOPHER **NOAM CHOMSKY** SAW DEEP BLUE'S WIN ANOTHER WAY:

IF CARNEGIE TECH'S COMPUTER PROGRAM CAN BEAT KASPAROV, THAT'S ABOUT AS INTERESTING AS THE FACT THAT A BULLDOZER CAN LIFT MORE THAN SOME WEIGHT-LIFTER ... WHO CARES?

OF COURSE A COMPUTER COULD OUT-CALCULATE A HUMAN, IT'S WHAT THEY WERE INVENTED FOR.

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DESPITE KASPAROV'S DEFEAT, HUMANKIND HADN'T LOST ANYTHING. PLAY IS MORE THAN JUST VICTORY. MORE THAN JUST PLOUGHING TOWARDS A WIN.

PLAY HAS DEFINED US AS A SPECIES. FROM FIRE AND SONG, TO CULTURE AND TECHNOLOGY. FROM HIDE-AND-SEEK, TO **SPACEWAR!** AND DEEP BLUE. EVERY DEVELOPMENT WE'VE MADE IS 'ROOTED IN THE PRIMEVAL SOIL OF PLAY'.

PLAY IS THE SPACE WHERE WE **GROW**. GAMES OPEN UP THE POSSIBILITIES OF OUR IDENTITY, TESTING OUR LIMITS AND EXPANDING OUR REALMS OF EXPERIENCE THROUGH BOUNDLESS TRANSFORMATIONS.

THEY ALLOW US TO EXPLORE NEW WORLDS OR MAKE US MORE FAMILIAR WITH THE RULES AND STRUCTURES OF OUR OWN WORLD.

THEY HELP US TO EMPATHIZE AND UNDERSTAND OTHER PEOPLE'S EXPERIENCES, OR SEE CHOICE AND FATE IN A NEW LIGHT.

AND IN THE END, THEY OFFER **POTENTIAL**. A CHANCE TO STEP OUT OF THE LIMITING REALM OF REALITY, AND EXPLORE PURE POSSIBILITY.

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FOR ALL OF DEEP BLUE'S POWERS — ITS ABILITY TO LOOK 14 MOVES AHEAD, GLIMPSING A MULTIVERSE OF POSSIBILITY — IT COULD NEVER **EXPERIENCE** A GAME IN THE WAY WE CAN.

DEEP BLUE COULD **DO** CHESS, AND DO IT EXCEPTIONALLY WELL.

CHECK.

BUT IT COULDN'T **PLAY** IT.

ENDNOTES

PAGE 5

What is play, exactly? It's a question that has challenged philosophers and academics for centuries, with play seen as everything from a form of imitative learning to an outlet for excess energy.

Philosopher Bernard Suits offers us a fundamental sense of what play is: 'playing a game is the voluntary attempt to overcome unnecessary obstacles' (*The Grasshopper: Games, Life and Utopia* by Bernard Suits, p. 55). Meanwhile, historian Johan Huizinga offers this more complex definition: 'Summing up the formal characteristics of play we might call it a free activity standing quite consciously outside "ordinary" life as being "not serious", but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the common world by disguise or other means' (Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture*, p. 13).

In English, the word 'play' has multiple meanings – to mess around, to pretend, to compete, to cooperate, to perform, to be free. In many ways, play defies definition, or at least it defies containment as a single idea. I've never been a fan of definitions anyway, so I'll not stick to one. Simply put, I want room to play.

PAGE 6

Panels 1–3: For more on the links between animal and human play, see Paul Shepard, *The Tender Carnivore and the Sacred Game*.

While the most recognizable examples of animal play are found amongst mammals, play is something seen throughout the animal world. For Gordon M. Burghardt, play has its roots in ancient animal life: 'it is sobering to realise that since both vertebrate and invertebrate animals engage, to some extent, in play, the potential for play goes back to the common ancestor of these groups and perhaps earlier, maybe as far back as 1.2 billion years ago' (Gordon M. Burghardt, 'Play and evolution', p. 491).

Writer David Graeber playfully suggests we can look back even further: 'If an electron is acting freely – if it, as Richard Feynman is supposed to have said, "does anything it likes" – it can only be acting freely as an end in itself. Which would mean that at the very foundations of physical reality, we encounter freedom for its own sake – which also means we encounter the most rudimentary form of play' (David Graeber, 'What's the point if we can't have fun?', web).

PAGE 7

Panels 1–2: Johan Huizinga theorizes that all of human culture and achievement stems out of play. By showing the links between them, he makes little distinction between art, ritual and play, and then goes on to show how those things evolved into more complex cultural concepts like law, philosophy and science. As he puts it, 'All are rooted in the primeval soil of play' (Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture*, p. 5).

From a personal perspective, I totally buy this argument. What I do today as a comic artist I do because of play. As a kid I played by drawing comics and writing stories. As a teenager I spent hours at play, learning how to work on digital photo-editing software, animation software and video-editing software. This was all done, not for survival, but for fun.

Panels 3–5: Some of the oldest evidence of what we consider human life are artefacts of play. Ancient cave paintings date from 40,000 years ago, and some of the Palaeolithic flutes discovered are thought to be between 35,000 and 43,000 years old, the earliest known musical instruments. The earliest controlled use of fire may be more than 1,000,000 years ago.

PAGE 8

Panel 3: For more on these early game boards, see St John Simpson, 'Homo ludens: The earliest board games in the Near East'. The article covers a series of different sites across present-day Jordan and Egypt. These very early human settlements contain evidence of amazing human ingenuity. At the 'Ain Ghazal site archaeologists have found not just the earliest board games but beautiful ceramic statues of human figures.

At the Burnt City site in Iran, dating to around 3200–2100 BCE, archaeologists have found the world's first-known backgammon set and six-sided dice. Other finds there are just as fascinating. On one body they found an artificial eyeball made of bitumen paste, a layer of gold and an engraved iris, attached to the wearer's skull by golden thread. Also on site was a goblet adorned with decorations of a gazelle that appears to jump when the goblet is rotated. Archaeologists believe this is the first example of animation; see Richard C. Foltz, *Iran in World History*, p. 6.

As historian Irving Finkel argues, board games are exceptionally vulnerable to being lost from the historical record. In Malaya, chess pieces are cut from tender bamboo shoots and when pieces are captured they're eaten on the spot. Cloth boards from India have been known to get eaten by insects. And when boards are temporarily carved into wood or drawn into the sand, they're easily lost forever; see Irving L. Finkel, 'Introduction', p. 2.

Panel 4: Mancala is a game where players take turns sowing pieces in holes around the board, attempting to capture as many pieces as possible by the end of the game. It is thought that the game was originally inspired by the process of planting seeds (Irving L. Finkel, 'Introduction', p. 2).

PAGE 9
Panel 1: See St John Simpson, 'Homo ludens: The earliest board games in the Near East'.

Panels 3–5: See Garry Chick, 'Anthropology/pre-history of leisure', p. 46.

PAGE 10
Theorists Espen Aarseth and Paweł Grabarczyk have suggested that senet is a 'ludic corpse'. While game boards and pieces have been recovered, the rules and mechanics of the game are lost to history. In a sense the game of senet is dead because 'the soul of the game has passed on' (Espen Aarseth and Paweł Grabarczyk, 'An ontological meta-model for game research', p. 14).

Panel 4: Quote from Peter A. Piccione, 'The Egyptian game of senet and the migration of the soul', p. 59. Pictured is the tomb of the Egyptian queen Nefertari, who ruled from 1295 to 1255 BCE. Traces of the game of senet, found as hieroglyphs, board fragments and pieces, have been found as far back as the tomb of Merknera dating from around 3300 BCE. It is likely the game evolved during a time before this – perhaps amongst peasant communities, as did many games in the past.

PAGE 11
Panel 1: Macuilxochitl wasn't just a god of games but of pleasure, flowers, art and music. Some time before 1600 BCE, the Mesoamericans also invented the rubber ball, using latex from rubber trees. Like many early games these balls may have originated as part of rituals and ceremonies, evolving into a number of games similar to modern-day racquetball, volleyball and basketball.

Panel 2: The game would go on to be adopted by the British during Colonial rule, transformed into the much loathed childhood 'classic' snakes and ladders. In Salman Rushdie's **Midnight's Children**, the narrator describes the game beautifully:

> All games have morals; and the game of Snakes and Ladders captures, as no other activity can hope to do, the eternal truth that for every ladder you hope to climb, a snake is waiting just around the corner, and for every snake a ladder will compensate. But it's more than that; no mere carrot-and-stick affair; because implicit in the game is unchanging twoness of things, the duality of up against down, good against evil; the solid rationality of ladders balances the occult sinuosities of the serpent; in the opposition of staircase and cobra we can see, metaphorically, all conceivable oppositions, Alpha against Omega, father against mother. (p. 160)

Panel 3: See Irving L. Finkel, 'Introduction', p. 2. Pictured here are lots and dice from throughout history. Of note is the green twenty-sided dice: such dice have been found on sites from ancient Rome, Greece and Egypt. It is not clear where many of these originate, or what their purpose was – most are inscribed in Greek, Egyptian or Latin. One such dice had a different Egyptian god's name carved on each face, allowing the user to figure out which deity to seek assistance from; see Met Collection, 'Twenty-sided die (icosahedron) with faces inscribed with Greek letters'.

Panel 4: While dice games have often been devalued throughout history due to an association with gambling, they have also been crucial to the development of our understanding of probability. In sixteenth-century Venice, the multitalented scientist and notorious gambler Gerolamo Cardano worked to improve his luck by developing his mathematical understanding of dice rolls. In doing this he laid the foundations of probability, showing that you could represent odds as a ratio or fraction (e.g. one-in-six chance). He also demonstrated that you could add probabilities together or even multiply them to find out the odds of more complex situations. His work was followed up by that of Blaise Pascal and Pierre de Fermat, who in 1654 settled a dispute between two friends who couldn't decide how their interrupted dice game would have turned out. Together they devised the foundations of modern statistics, today responsible for everything from insurance to the stock market. For more on this see Steven Johnson, **Wonderland: How Play Made the Modern World**, pp. 188–90.

PAGE 12
Panel 1: Quote from Irving L. Finkel, 'Introduction', p. 1. The boards pictured here, from left to right, are mehen, hounds and jackals, and the game of fifty-eight holes, all from ancient Egypt, and mancala.

Panels 2–3: The game here is the royal game of Ur, a race game popular across the Middle East. Its rules have been recovered from a clay tablet written in 177 BCE, but boards date back as far as 3000 BCE. Four game boards were found the tomb of pro-gamer Tutankhamun, who also brought two senet sets with him to the afterlife. The graffito version was found on a bull-headed statue from the palace of Sargon II in Khorsabad, from around 721–705 BCE. It can be seen today in the

British Museum. For more see William Green, 'Big game hunter'.

Panel 4: The ancient Romans were big into their board and dice games, and games would take over public spaces and become public spectacle. In general, games of skill were given a higher cultural status than games of luck, but both thrived, despite the latter's illegality. Other popular Roman board games included latrunculi (a sort of Roman chess) and hopscotch. For more, see Francesco Trifilò, 'Movement, gaming, and the use of space in the forum'.

Panels 5–6: Pictured is the ancient Chinese game of go. The game was first mentioned in the Zuo zhuan, an ancient Chinese work of history which dates the game to before 548 BCE.

PAGE 13
Panel 6: Pictured here are some of the earliest known chess pieces, found in Uzbekistan in 1977. The first chess pieces were ornate and beautiful, modelled after animals and sometimes human figures. After the Muslim conquest of Persia in 650 CE, chess became a big part of early Muslim society. To conform to Islamic law, abstract carvings replaced ornate animal and human figures. For more on this, see David Shenk, *The Immortal Game: A History of Chess*, pp. 30–33.

Panel 7: Chess historian Gerhard Josten argues that chess has lineages in games from across the ancient world: from China games like go and liubo and from India games like pachisi and chaupar (precursors to ludo). During the first centuries of its life, chess was a living, evolving game, taking on many different forms as it made its way to its current state; see Gerhard Josten, 'Chess: A living fossil'.
  The game tafl predates chaturanga by a few hundred years, and bears a lot of similarity. Originating in Viking culture, the game sees a king and his army beset on all sides by a weaker but more numerous opponent. The game spread across northern Europe but was supplanted by chess when it reached the area in the twelfth century.

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Panel 1: For more on the spread of chess, see David Shenk, *The Immortal Game: A History of Chess*, p. 18.
  Chess is a game so surrounded in myth that it has been said to have been a gift from Moses to humanity; a mathematical training-ground devised by Pythagoras (ibid., p. 14); or the tool of Babylonian philosophers to teach reason and leadership to the cruel tyrant king Evil-merodach; See Jenny Adams, *Power Play: The Literature and Politics of Chess in the Late Middle Ages*, p. 15.

Panel 4: Map based on inside-cover image from Henry A. Davidson, *A Short History of Chess*.

Panel 5: Quote from Steven Johnson, *Wonderland: How Play Made the Modern World*, p. 185. After the Bible, the second book to be printed in English was *The Game of Chess* by the Dominican friar Jacobus de Cessolis. The book itself combined guidance on the game with an influential treatise on contemporary medieval society, examining the interconnected role that each 'piece' plays in a functioning society through the metaphor of chess. For more on this subject, see ibid., pp. 173–7.

Panel 6: Carved from walrus ivory, the Uig or Lewis chessmen are believed to have come from Trondheim in Norway around the twelfth century. At the time, the Outer Hebrides were ruled by Norway and the pieces may have been left behind on Lewis by a ship destined for wealthy Norse colonies in Ireland. Stashed away in a stone kist, the pieces were rediscovered in 1831 by Malcolm MacLeod as he walked along sandbanks on the bay of Uig on Lewis.
  In recent years, a debate has emerged about where the collection of seventy-eight chess pieces should be kept. Currently, sixty-seven are displayed in London, while eleven are in Edinburgh's National Museum of Scotland. It's part of a larger ongoing debate about where artefacts should be presented, since many of the exhibits at places like the British Museum were essentially stolen or unfairly claimed from their home countries during the days of empire, and have yet to be returned.

Panel 7: Pictured is Ivan the Terrible, the first tsar of Russia, who ruled from 1547 to 1584. According to historian H. J. R. Murray, the tsar was heavily influenced by the powerful church of the time, which, along with drinking, witchcraft, hunting and dancing, saw game-playing as a great evil. As one manuscript from the time puts it: 'whether he do it himself or his master or mistress or his children, servants, or peasantry do it and he do not forbid and prevent it … verily they shall all dwell in hell together, and shall be accursed on earth' (quoted in H. J. R. Murray, *A History of Chess: The Original 1913 Edition*, p. 381).

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Panel 2: Kempelen was quite the inventor and researcher. The same year that he presented the Turk, Kempelen began work on a speaking machine. The task would occupy the next twenty years of his life, during which he wrote a treatise on human speech. His final design mimicked human speech by copying the mechanisms by which we speak – incorporating rubber lips, nostrils and throat, and using bellows for lungs. Operated by a skilled human, the machine could speak complete sentences in Italian, French and English. After Kempelen's death in 1804, the speaking machine went on show across Europe, going on to inspire a young Alexander Graham Bell to try and build his own (R. Linggard, *Electronic Synthesis of Speech*, p. 9).

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Panel 1: After Kempelen's death, the Turk was bought by the Bavarian musician Johann Mälzel, who took it on tour. The story goes that during his match with the Turk, Napoleon attempted to outwit and test it at every turn. He unexpectedly took the first turn, and then proceeded to attempt illegal moves against the Turk. Legend has it that after Napoleon's third attempt at cheating, the Turk swept its hand across the board, knocking the pieces to the floor.

Mälzel died at sea in 1838, leaving the Turk to a friend who later sold it on. In 1854 the Turk was destroyed when a fire ripped through the museum in which it was kept.

Panel 2: Quote from Robert Willis, *An Attempt to Analyse the Automaton Chess Player of Mr de Kempelen*, p. 11.

Panel 3: Although there was conjecture for years about how the Turk worked, its secret was only truly revealed after its destruction, in an article by Silas Weir Mitchell for *The Chess Monthly* in 1857.

Codebreaker and mathematician Alan Turing provides a possibly apocryphal tale about the Turk: 'it was finally shown up when somebody shouted "FIRE" during a game, and caused the machine to go into a paroxysm owing to the efforts of the little man inside to escape' (Alan Turing, 'Digital computers applied to games', p. 286).

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Panel 2: Quote from Charles Babbage, *Passages from the Life of a Philosopher*, p. 465.

Panel 4: See Nick Montfort, *Twisty Little Passages: An Approach to Interactive Fiction*, p. 76. As limited as it was, for historian Nick Montfort, *El Ajedrecista* can be seen as the first ever computer game.

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Panel 2: The Polish Cipher Bureau's involvement with the Enigma started in 1927 when a package containing a German cipher machine was accidentally sent through Polish customs. A German representative's anxious efforts to retrieve the package raised suspicions and so the bureau was called in to investigate, carefully examining the machine before repackaging it and sending it on its way. Over the years that followed, the bureau would attempt to crack the German codes coming over the airwaves, but to no avail.

Enter Marian Rejewski, a mathematician who applied pure mathematics to the problem, reconstructing the new-and-improved Enigma machine sight-unseen in 1932. With every new version, the Germans would add complexity upon complexity to their own device. But Rejewski, along with mathematicians Jerzy Różycki and Henryk Zygalski, were rarely far behind. In 1938 they constructed a series of cryptographic machines known as '*bombas*', which could make short work of the German codes.

It is Rejewski who is pictured in this scene. Shortly after this delivery, Rejewski and his team fled Poland to continue the cryptographic fight against Germany, first in France and later in Britain. For more on the story of Marian Rejewski, see Eilidh McGinness, *The Cypher Bureau.*

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Panel 4: The one letter that a letter could not be converted into was itself. This was the chink in the Enigma's armour that Turing and his team exploited.

Panel 7: See Jeffrey T. Richelson, *A Century of Spies: Intelligence in the Twentieth Century*, p. 176.

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Panel 1: See Alan Slomson, 'Turing and chess', p. 623. By all accounts, Turing wasn't actually particularly good at chess, but he did enjoy it, along with others at Bletchley Park.

Panel 2: The history of computing goes back much further than this. The earliest known computing tool was the abacus, invented in Babylon more than 4,500 years ago. The Antikythera mechanism was an ancient Greek analogue computer from around 100 BCE, designed to make astronomical predictions and track calendar dates. In the medieval Islamic world, the astrolabe used a series of rotating plates to aid navigation, triangulation and even help point worshippers to Mecca. In the eighteenth century, the multitalented German inventor Gottfried Leibniz conceived of (or perhaps stole) the first binary numeral system, developing it into the step reckoner, a mechanical, digital calculator that could add, subtract, multiply and divide. And by the nineteenth century, Charles Babbage and Ada Lovelace were at work on the idea of the Analytical Engine, which could theoretically read different programs and perform a number of different functions, including complex algorithms. For more on the history of computing, see Gerard O'Regan, *A Brief History of Computing.*

Panel 6: In her book *Zeroes and Ones: Digital Women and The New Technoculture*, Sadie Plant gives a wonderful account of the hidden women of computing. Before computers as we know them, a 'computer' meant a person who made calculations. The first computers in this sense were normally rooms of talented women who worked together to compute complex problems.

Behind the scenes at Bletchley Park women worked day and night trying to crack the Enigma before the Bombe was made. And once it was, they went to work on the machine itself. Nicknamed Wrens, by the end of the war there were around 2,500 of them at work on translation and cryptanalysis, and on computers like the Colossus and the Bombe, breaking codes that turned the tide of the war.

In a sexist society their work went largely unacknowledged, forgotten until recent years. And yet, women were truly at the forefront of the first computers. Grace Hopper was one of the first computer programmers, working on the Harvard Mark 1 in 1943. A team of seven women were responsible for programming the ENIAC, the first digital programmable computer, revealed in 1946. Margaret Hamilton meanwhile wrote the onboard flight software for the Apollo Space Program.

For Bombe operator Diana Payne, the accomplishment of Turing and his team was brilliant, 'but the outcome of their work was dependent on the unremitting toil and endurance of almost two thousand Wrens' (Diana Payne, 'The Bombes', p. 136).

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Panel 1: Quote from Alan Turing, 'Digital computers applied to games', p. 289. This idea was the basis of the Turing Test, a concept proposed by Turing in 1950. In the test, a human evaluator asks two subjects a series of questions, which are asked and answered through a keyboard and screen interface. Since one of the subjects is a computer, to pass the Turing Test, that computer must convince the human evaluator that they are communicating with another human.

Since then, the concept of the Turing Test has expanded, and the general idea is that to pass the Turing Test is to convince a human that a computer has intelligent thought, or is indeed human. Many have criticized the idea and importance of the test. As artificial intelligence historians Stuart Russell and Peter Norvig argue: 'Aeronautical engineering texts do not define the goal of their field as making "machines that fly so exactly like pigeons that they can fool even other pigeons"' (Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*, p. 3).

Panel 4: Figures from David Shenk, *The Immortal Game: A History of Chess*, p. 212. German computer scientist Konrad Zuse actually worked on a computer chess program before Turing, in 1941. It was part of his pioneering work on the programming language Plankalkül, developed for the Z3, the world's first programmable computer. The chess program he developed was never put into practice and remained lost until the 1970s.

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Panel 1: Turing would never live to see his program actually at work on a computer. Sadly, his later life was one marked by oppression and tragedy. In 1952 Turing was convicted by the British courts for 'gross indecency', after the fact that he was gay surfaced following his reporting of a robbery at his home. Choosing probation over imprisonment, Turing was forced onto a regime of synthetic estrogen that wreaked havoc on his body. In 1954 he died of cyanide poisoning at his home. His death was ruled a suicide.

In 2013, Turing was pardoned by the queen; other gay men convicted under similar circumstances would not be pardoned until 2017. Many have argued that the British government should apologize for enforcing these homophobic laws, and that a pardon maintains the idea that these men did something wrong.

Panel 2: Pictured is Claude Shannon, an American mathematician whose own chess program worked like Turing's to maximize gains and minimize losses by assigning values to different pieces.

Panel 3: Arthur Samuel's checkers-playing program was one of the first examples of an adaptive, learning computer program. It did this in three ways: by processing data from real-world games between human players; by remembering games it had played against humans; and by playing games against modified versions of itself, where the winning program would survive and the loser would be scrapped.

We might look on these first chess and checkers programs as the world's first gaming 'bots' – AI-controlled players that allow a gamer to play a multiplayer game solo.

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Panel 4: Quote from Alan Turing, 'Digital computers applied to games', p. 287.

Panel 5: See Tristan Donovan, *Replay: The History of Video Games*, p. 6.

Panel 6: The early history of games played on computers is patchy at best. As games historian Alexander Smith argues, beyond the history we know of 'there is a high degree of likelihood that researchers created logic puzzles, board games, card games, military simulations, etc., that never received larger exposure and have long since been lost' (Alexander Smith, 'The priesthood at play: Computer games in the 1950s', web).

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Panel 2: As historian Steven Levy shows, the term 'hacker' originated at MIT, where 'hack' was originally used to refer to

the elaborate pranks pulled by students on a regular basis. The Tech Model Railway Club took their fun very seriously: 'to qualify as a hack, the feat must be imbued with innovation, style, and technical virtuosity' (Steven Levy, *Hackers: Heroes of the Computer Revolution – 25th Anniversary Edition*, p. 6).

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Panel 2: As Levy puts it: 'The idea was to make a computer more useable, to make it exciting to users, to make computers so interesting that people would be tempted to play with them, explore them, and eventually hack them' (ibid., p. 38).

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Panel 2: Pictured is one of Russell's favourites, the *Lensman* series by E. E. Smith, which according to Russell himself, inspired the idea for *Spacewar!*.

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Panel 2: While it's obvious that *Spacewar!* was revolutionary, some of the more minor accomplishments of those heady days of programming are easily missed. On the surface just a game, *Spacewar!* represented a hyperspace jump forward for programming. From Expensive Planetarium's accurate graphical model, to the co-development process the game inspired, *Spacewar!* marked many firsts. The team's work was a prime example of the potential for 'real-time' interactions with computers, which had hitherto been almost unseen.

Panel 5: See ibid., p. 45. Fortunately for me in drawing this sequence, there is a lot of good visual documentation of the PDP-1 and some pictures of the original creators. The controllers that Kotok and Saunders made aren't so well documented, but Tom Tilley's thoughtful reconstruction are the basis for how I drew them; see Thomas Tilley, '*Spacewar!* controllers'.

Panel 6: Digital Equipment Corporation were so pleased with the game that the PDP-1 started shipping with it pre-installed. It was the last test on the assembly line and the first thing the consumer saw when they switched it on; see Steven Levy, *Hackers: Heroes of the Computer Revolution – 25th Anniversary Edition*, p. 46.
   The IBM *Spacewar!* ban didn't last long. As Stewart Brand states: 'After a few suddenly uncreative months of joyless research the ban was rescinded. Apparently, frivolous Spacewar had been the medium of important experiments' (Stewart Brand, 'Spacewar: Fanatic life and symbolic death among the computer bums'). As we see time and again, play is often far from simple, and those in play are often in the process of learning or discovery.

Panel 8: Quote from Stewart Brand, '*Spacewar:* Fanatic life and symbolic death among the computer bums', a wonderful, poetic and readable account of the making of *Spacewar!*: 'It was the illegitimate child of the marrying of computers and graphic displays. It was part of no one's grand scheme. It served no grand theory. It was the enthusiasm of irresponsible youngsters. It was disreputably competitive … It was an administrative headache. It was merely delightful' (ibid.).

Panel 9: The story of *Spacewar!* is now carved into video game legend. As games theorist Bob Rehak puts it, 'the creation of *Spacewar!* has come to be viewed with a reverence befitting the Book of Genesis' (Bob Rehak, 'Playing at being – psychoanalysis and the avatar', p. 109).

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Panel 1: Quote from Stewart Brand, '*Spacewar:* Fanatic life and symbolic death among the computer bums'.

Panel 2: According to historian Tristan Donovan, Bill Pitts was an avid urban explorer, more interested in Stanford's underground tunnels and off-limits buildings than going to lectures. He only stumbled across *Spacewar!* when he broke into the school's artificial intelligence lab and saw it running on a PDP-6; see Tristan Donovan, *Replay: The History of Video Games*, p. 16.

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Panel 1: Quote from Bill Pitts, 'Bill Pitts, '68', web.

Panel 4: While as far back as 1947, DuMont Laboratories had toyed with their 'cathode-ray tube amusement device', it wouldn't be until Ralph Baer's Odyssey that home gaming would become a tangible reality. Launched in September 1972, just weeks after the release of *Pong*, the Odyssey was buoyed by the success of Atari's game. Other competition would follow. In 1975, Atari released a dedicated home *Pong* console, and by 1976 Mattel were releasing hand-held games like *Auto Race* and *Football*.

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For a great chronology of these eager early days of arcade game design see Tristan Donovan, *Replay: The History of Video Games*, pp. 65–93.

Panel 3: Quote from Mihaly Csikszentmihalyi, *Flow: The Psychology of Happiness*, p. 71 . For more on flow, and its application by game designers, see Jane McGonigal, *Reality is Broken: Why Games Make Us Better and How They Can Change the World*.

Panel 1: The story of the female engineers at Atari is documented in Cecilia D'Anastasio, 'Sex, *Pong*, and pioneers: What Atari was really like, according to women who were there'. The article both celebrates the women who worked at Atari, often forgotten by the history books, and examines a culture of sexism that existed in the company at the time. For Atari sales figures, see Tristan Donovan, *Replay: The History of Video Games*, p. 25.

Panel 2: Pictured is *Gun Fight*; known as *Western Gun* in Japan and Europe, the 1975 game was renamed in the US. For the American edition, the engineers used an Intel microprocessor. A gaming first, the choice would be revolutionary: games would no longer be engineered as hardware, but programmed as software which told the adaptable microprocessors how to work. The sudden demand for microprocessors led Midway to buy up 60 per cent of the RAM available at the time; see ibid., pp. 41–2.

Panel 3: *Death Race* (1976) caused the first ever moral panic over video game violence, an issue explored later in my book (see p. 130). The game was based on *Demolition Derby* (1975) by Jerry Lawson, an African-American engineer who was not too pleased about his game's follow-up: 'Instead of hitting cars you hit people and a tombstone popped up. That's how grotesque people get to be when they want to' (quoted in Tristan Donovan, *Replay: The History of Video Games*, p. 66).

Lawson would go on to design the Channel F console for Fairchild Semiconductor. Lawson's idea was to harness the company's cutting-edge microprocessor technology to allow the console to use interchangeable game cartridges. While the console was a modest success, the idea was a game-changer. Now a home console could last for years, refreshed by a constant flow of new games; see ibid., pp. 66–7.

Panel 4: Like *Galaxy Game* and *Computer Space*, *Space Wars* (1977) was a knock-off of *Spacewar!*. Also pictured are *Stunt Cycle* (1976) and *Tank* (1974).

Panel 5: Pictured is *Shark Jaws* (1975), an unlicensed tie-in to Steven Spielberg's blockbuster *Jaws*, which came out the same year. Nolan Bushnell made the game under the subsidiary company Horror Games in case *Jaws*'s movie studio, Universal, sued.

Panel 6: Pictured is *Night Driver* (1976), one of the earliest games to have a real-time first-person viewpoint.

Panel 7: The story of *Breakout*'s creation is fascinating. Based on an idea by an unknown member of the Atari team, the game was handed off to a hippy technician at Atari called Steve Jobs. Jobs brought his friend Steve Wozniak on board and with Wozniak's labour and expertise they managed to cut the number of integrated circuits required by the game in half . According to historian Tristan Donovan, Jobs was rewarded with a bonus of several thousand for this technical feat, but lied to Wozniak, giving him his 'half ' – a measly $350; see ibid., p. 44.

Panel 8: Quotes from David Sudnow, *Pilgrim in the Microworld*, pp. 135 and 43; the book is a lyrical account of the early days of arcade gaming.

Panel 2: Quote from Tristan Donovan *Replay: The History of Video Games*, p. 76. This tale is possibly apocryphal. Historian Mark Fox argues the shortage was likely due to other factors, including silver hoarding. *Space Invaders* was certainly popular though. By 1982 it had grossed $2 billion in quarters. Its net profit of $450 million meant that it out-grossed the contemporary highest grossing movie of the time, *Star Wars*, which had netted $175 million; see Mark Fox, '*Space Invaders* targets coins'.

Panel 4: As arcade gaming conquered the planet, it became clear the next frontier would be the home. While previous home consoles had existed, the release of the Atari VCS (also known as the Atari 2600) in September 1977 was the true revolution for home gaming. Finally, gaming could come home in a real way. The VCS contained a microprocessor and used cartridges just like the Fairchild Channel F, but was backed up by Atari's growing catalogue of games. Competing consoles like the Fairchild Channel F, Mattel's Intellivision and the Magnavox Odyssey floundered, and Atari was king.

Panel 5: Pictured is Twin Galaxies, the famous arcade founded by Walter Day. Day established record keeping for video game high scores in the early 80s, and today the Twin Galaxies organization oversees world-record attempts at video game high scores. The culture of high score competition, and Walter Day's part in it, is wonderfully documented in Seth Gordon's

documentary *The King of Kong: A Fistful of Quarters* (2007). For arcade sales numbers, see Laura June, 'For amusement only: The life and death of the American arcade'.

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Panel 1: Pictured is Dona Bailey who, along with Ed Logg, designed *Centipede* (1981) for Atari.

Panel 2: Pictured is *Galaxian* (1979). Dona Bailey cites the game as her inspiration for leaving programming with General Motors for Atari: 'I adored *Galaxian*, I thought it was intensely beautiful. Its repetition of patterns, its colours and its swooping and swerving motions. I wanted to make something that seemed as beautiful to me' (quoted in Tristan Donovan, *Replay: The History of Video Games*, p. 85).

Panel 6: Fiero comes from the Italian word for taking pride in a win For more on fiero, see Nicole Lazzaro, 'Understand emotions', p. 23. As Lazzaro puts it, 'Players cannot push a button and feel fiero; they must feel frustrated first because fiero is the reward for accomplishing something difficult' (ibid., p. 23).

Panel 8: This panel image is based on the classic, cringy *Time* magazine cover from 18 January 1982. The headline read: 'Gronk! Flash! Zap! Video Games Are Blitzing the World'. As games theorist Jane McGonigal puts it, 'Never before in human history could this kind of optimal, emotional activation be accessed so cheaply, so reliably, so quickly' (Jane McGonigal, *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*, p. 40).

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Panel 1: Pictured is the cabinet from *Centipede* (1981).

Panel 4: Figures from Steve Bloom, *Video Invaders*, p. xix.

Panel 6: Pictured is Space II Arcade, run by African-American entrepreneur Delores Williams; see S. Lee Hilliard, 'Cash in on the videogame craze', p. 43.

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Panel 1: Pictured in the background are posters for the Namco hits *Gee Bee* (1978) and *Galaxian* (1979). *Gee Bee* was designed by Iwatani himself.

Panel 2: *Kaiju* are the gigantic monsters of Japanese cinema like Godzilla, Mothra and Rodan; the word means 'strange beast'.

Panel 3: See Tristan Donovan, *Replay: The History of Video Games*, p. 87.

Panel 4: 'Kawaii', meaning 'cute' or 'adorable', is a Japanese cultural style that has grown in appeal since as far back as the 1950s.

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Panel 2: The *Pac-Man* album *Pac-Man Fever* (1982) featured stone-cold bangers like 'Froggy's Lament', 'Ode to a Centipede' and 'Do the Donkey Kong'. The 'Pac-Man Fever' single reached number 9 in the US Billboard Hot 100.

Panels 4–5: Pictured are cave paintings at the Tassili n'Ajjer UNESCO World Heritage Site in southeast Algeria, and Buster Keaton in *The General* (1927).

This tendency to see faces even where there are none (in a rockface, a socket, a car's lights and grille) is called pareidolia. It's likely the product of pre-conscious processes designed to identify other faces and interpret their mood or intent. It's a phenomenon that allows cartoonists or game designers to create iconic, engaging characters who have just a couple of dots for eyes and a line for a mouth.

Panel 6: See Steven Poole, *Trigger Happy: Videogames and the Entertainment Revolution*, p. 148.

Panel 7: It's interesting to note that while *Pac-Man* proved hugely successful in the arcade market and sparked a revolution in character design, it also heralded the beginning of the end for Atari: a poor quality port of the game to the Atari VCS console damaged consumer confidence in the Atari brand.

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Panels 1–2: Pictured are both Nintendo's first headquarters in Kyoto in 1889 and its headquarters from the 1970s, during its heyday as a toy, electronic game and playing card manufacturer. Some of its iconic products include the Love Tester and the Ultra Hand extending-arm toy. The *Game & Watch* series ran from 1980 to 1991, by which time the concept was being

superseded by the Game Boy. Sixty different games were released over that time, each as part of a different *Game & Watch* device.

Panel 3: Pictured is *Radar Scope* (1979), a huge hit in Japan; Nintendo thought they had a guaranteed hit, spending their entire US budget on 3,000 *Radar Scope* cabinets.

Panel 5: Quote from Tristan Donovan, *Replay: The History of Video Games*, p. 100.

Panel 6: See Blake J. Harris, *Console Wars: Sega, Nintendo, and the Battle that Defined a Generation*, p. 42.

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Panels 2–3: Pictured is Carol Shaw and her game *River Raid* (1982) for the Atari VCS. To overcome memory constraints, Shaw realized she could store the game's long and complex levels via a procedural generation algorithm. By using a single starting value, the game would always come out the same way, while saving valuable cartridge space. Shaw worked in game design from 1978 until 1984, first with Atari and then Activision. She is known as one of the best programmers Atari ever had and was instrumental in the production of the Atari VCS.

Panel 4: As Chris Kohler documents, Shigeru Miyamoto was directly inspired by *Pac-Man*'s sense of design. As Miyamoto himself puts it, *Pac-Man* was 'the first game where I recognised an actual effort in design. You didn't have designers at the time, so most games didn't really have any design sense. When someone with a background in design like me saw that, I felt like this was my true calling in life' (quoted in Chris Kohler, *Power-Up: How Japanese Video Games Gave the World an Extra Life*, p. 36).

Panel 5: Inspired by Miyamoto's love of manga, *Donkey Kong* (pictured) was designed with four different stages, which together tell the tale of Donkey Kong's kidnap of Pauline, and her final rescue by Jumpman. Miyamoto's team of programmers balked at his insistence on featuring four different stages to the game. For them this was the equivalent of programming four separate games, and was something that had rarely been seen before (ibid.).

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Panel 1: Quote from Shigeru Miyamoto in Laura Sydell, 'Q&A: Shigeru Miyamoto on the origins of Nintendo's famous characters'.

Panel 2: Quote from Marc Nix, 'IGN presents: The history of *Super Mario Bros.*'.

Miyamoto puts it in his own words: 'We had to draw Mario as a small character and at the same time, we had to make him look human. To do that, we needed to draw a distinctive feature for him, such as giving him a big nose. We gave him a moustache so that we didn't need to draw a mouth. It is difficult to show facial expressions with small characters. We gave him big hands. Since we were trying to create something distinctive in the character, it was natural to draw something like that ... So I didn't have any special theory behind the making of Mario. He evolved over the development process, followed by a final drawing of what I wanted him to look like' (quoted in Anjali Rao, 'Shigeru Miyamoto Talk Asia Interview').

Panel 4: Eagle-eyed readers will notice that Mario's colour scheme has changed. The change took place for the original *Mario Bros.* game, released in 1983 in the wake of *Donkey Kong*'s success. Some of the iconography for Mario was established in his first solo outing, including green pipes, fireballs, coins, Koopa turtles and his brother Luigi. However, it wouldn't be until the side-scrolling *Super Mario Bros.* (1985) that the Mario that we know and love today was truly established.

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Panel 1: Pictured are *Super Mario Bros. / Duck Hunt* (1985), *Ghosts & Goblins* (1986), *River City Ransom* (1989) and *Gyromite* (1985).

Panel 3: In 1983 the US video game market collapsed. To blame was an oversaturated market brimming with numerous different consoles and a glut of games created to cash in on the console craze. With game-makers ploughing money into the sector and consumer confidence in these new games dwindling, it was only a matter of time before the bubble popped. By 1982 smaller publishers were starting to fold, leading to bargain bins overflowing with excess stock that drew consumers away from more expensive titles and further damaged their confidence in the quality of games.

Atari was the hardest hit of all. With a large slate of games out in 1982, the crash dashed their hopes of making a killing. One of their premier releases was *ET the Extra Terrestrial* (1982), a hurriedly made movie tie-in that hit shelves in the 1982 Christmas season to bad reviews and worse sales. With stocks overflowing, Atari took action by burying more than 700,000 unsold cartridges of various games in the Alamogordo landfill in New Mexico.

In 2014, the landfill was excavated as part of Zak Penn's documentary *Atari: Game Over* (2014), a fascinating insight into

the early days of Atari and the resulting crash.

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Panel 1: In contrast to Mario's happy and naive characterization, Sonic was marketed as a Gen-X cool dude. As games historian Blake J. Harris puts it: 'Sonic embodied not only the spirit of Sega of America's employees but also the cultural zeitgeist of the early 1990s. He had captured Kurt Cobain's "whatever" attitude, Michael Jordan's graceful arrogance, and Bill Clinton's get-it-done demeanor' (Blake J. Harris, *Console Wars: Sega, Nintendo, and the Battle That Defined a Generation*, p. 75).

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Panel 1: Theorist Bob Rehak argues that player avatars over the arcade era evolved from being static and mechanical towards more organic, livelier, more animated forms: 'In appearance, movement, and character, avatars have ever more clearly come to mimic their players, developing personality, individuality, and an ability to act within the (virtual) world – as must any infant on its way to maturity' (Bob Rehak, 'Playing at being: Psychoanalysis and the avatar', p. 108).

Panel 5: Quote from Janet H. Murray, *Hamlet on the Holodeck: The Future of Narratives in Cyberspace*, p. 154. Pictured are the oldest known masks, made 9,000 years ago in Judea. As anthropologist Roger Caillois demonstrates, masks and mimicry have played a role in culture from the very beginning of human history. And in video games, masks return in the form of the characters we control. Masks we can slip in and out of at the push of a button. Masks that allow us to live out fantasies, or explore exactly who we are. As Caillois puts it, 'The pleasure lies in being or passing for another … the mask disguises the conventional self and liberates the true personality' (Roger Caillois, *Man, Play, and Games*, p. 21).

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Panel 2: Controllers pictured from left to right: *Spacewar!* controller (1962); Magnavox Odyssey controller (1972); Atari CX40 joystick (1978). Above these is the innovative Fairchild Channel F controller (1976), which had a top that functioned as an eight-way joystick, push-down button and twist knob. On the next page: the Nintendo Entertainment System gamepad (1983), which introduced the four-way D-pad to a mass audience; next is the computer mouse (from 1964); a Playstation controller (1994); the motion-sensing Wii Remote (2006); the Xbox Adaptive Controller (2018); the smartphone.

The Xbox Adaptive Controller set out to tackle a key barrier for many gamers – accessibility. The controller can be mapped in many different ways and allows users to attach further peripherals. It allows players who might not be able to use standard controllers to access the gaming medium more easily.

It has only been in recent years that hardware designers and game studios have started to take accessibility seriously. Many games now come with more options to make things easier on players, for example high-contrast visuals, large fonts, subtitling, a wide choice of difficulty levels and so on. It is clear more needs to be done, but the signs are good so far.

The website gameaccessibilityguidelines.com (accessed 26 February 2020) offers a comprehensive list of ways game-makers can make their games accessible to as many people as possible.

Panel 6: This panel riffs on a scene from 1989 movie-cum-Nintendo advert *The Wizard*. The line, delivered in all seriousness, has been mercilessly mocked since due to the real-life badness of the Power Glove control system. The controller also features in *Freddy's Dead: The Final Nightmare* (1991) in a scene in which Freddy Krueger controls a kid, compelling him to jump down a staircase and straight to hell.

Other notable attempts to remove the handheld controller include the Xbox Kinect (2010) and some virtual reality platforms.

Panel 7: Of course, controllers are more than just unproblematic technological artefacts – they are a product of the culture that creates them. Released in 1996, the Nintendo 64 introduced a trigger-shaped button on the underside of its controller. The idea was revolutionary, giving the controller a satisfying gun-like feel when playing *Goldeneye 007* (1997) or *Turok: Dinosaur Hunter* (1997). Today all mainstream console controllers have trigger buttons, and what is built into the hardware encourages certain kinds of play. It's no surprise that games centred around violence and firearm use dominate the mainstream.

This is what made motion control such a revelation to the industry. The Wii, with its motion-sensitive baton controller, opened up new avenues of interaction, foregrounding motion and touch instead of pulling a trigger. This simple reorientation of a controller's function made the Wii an enormous success, introducing a whole new audience to video game play.

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Panel 2: See Andreas Gregersen and Torben Grodal, 'Embodiment and interface', p. 66.

Panel 5: See ibid., p. 69. With proprioception comes something known as 'game feel'. Game feel is how the relationship between the input and the character onscreen feels, and game designers put a lot of time and effort into getting that feeling just right. While the physical feel of a controller is generally consistent, the feeling that is created by that interaction can be many things indeed. As game designer Robert Yang puts it: 'Clicking a mouse can be violent, intimate, joyful, or timid – satisfying, disappointing – sluggish, crunchy, snappy, floaty. Think of it as a sort of dance for your hands; the way you move

your hands characterizes your mood and emotional state as a player' (Robert Yang, 'How to tell a story with a video game (even if you don't make or play games)'. For more on game feel, see Steve Swink *Game Feel: A Game Designer's Guide to Virtual Sensation*.

Panel 6: Pictured is *Altered Beast* (1988).

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Panel 2: See David Owen, *Player and Avatar: The Affective Potential of Videogames*, pp. 3–5.

Panel 4: See Andreas Gregersen and Torben Grodal, 'Embodiment and interface', p. 68.

Panel 6: Quote from Josh Call, 'Bigger, better, stronger, faster: Disposable bodies and cyborg construction', p. 139.

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Panel 2: In their battle for market dominance, Sega actively sought to make games with pre-established fanbases. The result was a glut of movie tie-ins and celebrity-endorsed games like the two examples here. For more on the story of Sega's marketing strategy see Blake J. Harris, *Console Wars: Sega, Nintendo, and the Battle that Defined a Generation*.

Panel 6: Of course, to truly master a game like this, like a real-life fighter the player must first learn to master their own body. As theorist Chris Goto-Jones argues, to succeed, players must learn complex moves and responses, training until they are ingrained in muscle memory: 'While the movements involved may be relatively tiny and subtle – often just precise movements of fingers and thumbs – locomotor play is at least partially a form of embodied literacy akin to that required in other performative arts' (Chris Goto-Jones, 'Is *Street Fighter* a martial art? Virtual ninja theory, ideology, and the intentional self-transformation of fighting-gamers', p. 177).

While many games provide the player with an escapist power fantasy, fighting games like *Street Fighter, Mortal Kombat* (1991) or *Tekken* (1994) also provide a platform for players to become truly masterful. It's no surprise that games like these helped give rise to eSports, where players compete to show off their skill and mastery in front of massive audiences that rival those of traditional sports. For more, see ibid.

PAGE 51
Panel 1: Pictured are the hero-protagonists from *Bioshock 2* (2010) and *Assassin's Creed II* (2009).

Panel 2: Pictured is the modern iteration of Lara Croft in *Tomb Raider* (2013).

Panel 4: Pictured is the free-running rebel Faith in *Mirror's Edge* (2008).

Panel 5: Pictured is Adam Jensen in *Deus Ex: Human Revolution* (2011).

Panel 6: Pictured is Max Caulfield in *Life Is Strange* (2015).

Of course, not every game plays to power fantasy. Designed by philosopher Bennett Foddy, *QWOP* (2008) tasks you with getting an Olympic runner across the finish-line of a 100-metre sprint. While most sports games bestow you with all the skill and grace of a professional athlete, *QWOP* makes even simple movement difficult. With four keys, the player must activate the runner's thigh and calf muscles with perfectly timed precision to move forward. And so, like an infant, the player must learn to walk again, clumsily toddling forward as they struggle to control this new body; falling flat on their face more often than not. *QWOP* exists in stark contrast to the superhuman combinations of rolls, jumps, dodges and strafes that most video game characters are capable of.

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Panel 2: For theorist Bob Rehak, the shift from a top-down perspective to a perspective that matched, or even inhabited, the eyeline of onscreen characters was as significant a development for the medium as was the introduction of perspective to Western art during the Renaissance. Finally, here were spaces we could imagine as real, and characters we could hope to embody (Bob Rehak, 'Playing at being – psychoanalysis and the avatar').

Theorist Torben Grodal offers an interesting distinction between the experience of playing a game from first- and third-person perspectives: 'The most fundamental emotions like love, hate, jealousy, curiosity, sorrow, and fear rely on a first-person perspective for a full experience of those emotions. But emotions also may be simulated in a third-person perspective in which these emotions are modulated by empathy, like pitying the tragic hero or admiring the superhuman hero' (Torben Grodal, 'Stories for eyes, ear, and muscles: Video games, media and embodied experiences', p. 135).

This may explain why today narrative games that focus on the emotional landscape of the player-character tend towards a third-person perspective (for example *Life Is Strange*), while games geared towards empathy for other people are often

played in the first person (for example *Gone Home* or *Firewatch*).

Panel 3: Pictured is *Pitfall* (1982), one of the earliest so-called 'side-scrolling' adventure games. It went on to influence games like the trap-dodging classic *Prince of Persia* (1989).

Panel 5: In the background is pictured a poster for *Commander Keen* (1990), Carmack and Romero's side-scrolling adventure game. The game was made illicitly in the evenings at Carmack and Romero's workplace at Softdisk, working along with Tom Hall and Adrian Carmack. The game was a success and allowed the team to establish id Software and go it alone.

PAGE 53
Panel 1: The story of the making of *Doom* is entertainingly covered in David Kushner, *Masters of Doom: How Two Guys Created an Empire and Transformed Pop Culture*.

Panel 2: To create the magnificent monsters of *Doom*, Carmack and Romero turned to a very hands-on method. Working with Greg Punchatz, the team created detailed clay models of their monsters, which were then photographed and scanned into the computer to be drawn over (*MCV* staff, 'Models from hell: How practical maquettes defined the original *Doom*').

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Panel 4: Quote from Kevin Cloud in Dan Pinchbeck, *Doom: Scarydarkfast*, p. 24.

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Panels 1–3: Pictured are *Goldeneye 007* (1997), *Duke Nukem 3D* (1996) and *Half-Life* (1998).

Panel 4: Pictured is *Call of Duty 4: Modern Warfare* (2007).

Panel 6: Pictured is *Unreal Tournament* (1999).

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Panel 1: One result of this change was that female creators began to be pushed out of the industry. It's not that their games were unprofitable, but that the vision of what games *were* was redefined and narrowed to such an extent that they were pushed aside entirely. Adventure game pioneers like Roberta Williams of *King's Quest* fame and Jane Jensen of the *Gabriel Knight* series found their market narrowing as their games were sidelined and branded 'girly' by an increasingly macho gaming press. Today things are looking a little more positive, as a renaissance of diverse new creators are able to get their work out there in a way similar to the early days of games, a far cry from the limited landscape of the 1990s and 2000s.

For more on this topic, see Jessica Hammer and Meguey Baker, 'Problematizing power fantasy' and John Adkins, 'What happened to the women in the video games industry?'.

Panel 2: Pictured is *Mortal Kombat 3* (1995).

Panel 4: Quote from Riley MacLeod, 'The queer masculinity of stealth games'. Pictured from left to right are: Solid Snake from *Metal Gear Solid* (1998), Ken from *Street Fighter* (1987), Kratos from *God of War* (2005) and the eponymous Duke Nukem.

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Panel 4: Quote from ibid. Pictured is Nathan Drake in *Uncharted: Among Thieves* (2009).

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Panel 1: Pictured is *Resident Evil 4* (2005). Ashley is a classic damsel in distress, constantly getting into trouble and making things harder for Leon and the player.

Panel 2: These tropes are well covered in Anita Sarkeesian, 'Tropes vs. women in video games', an accessible examination of the ways that women are represented in games.

Panel 5: Pictured are Pink Bomber from the *Bomberman* series, Ms Pac-Man, and Amy Rose from *Sonic CD* (1993). *Ms Pac-Man* (1982) proved to be one of the most successful American-made arcade games ever manufactured. In an early games culture where women were starved for representation, *Ms Pac-Man*'s attempts, though clumsy, were nonetheless massively successful.

Quote from Marsha Kinder, *Playing with Power in Movies, Television, and Video Games: From Muppet Babies to Teenage Mutant Ninja Turtles*, p. 106.

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Panel 1: Pictured from left to right are Zoe in *Left 4 Dead* (2008), Chell in *Portal* (2007), Lara Croft in the *Tomb Raider* series and Aloy in *Horizon Zero Dawn* (2017).

Panel 2: Pictured is Ivy Valentine from *Soulcalibur* (1995). Other notably hyper-sexualized female characters in games include R. Mika from the *Street Fighter* series, Rachel from *Ninja Gaiden* (2004), Fran from *Final Fantasy XII* (2006) and Quiet from *Metal Gear Solid V: The Phantom Pain* (2015).

Unlike film, which has represented the female body through its choice of actors and how they are shot and styled, game designers have not faced the same restrictions. In the main, video game bodies for women represent a hyper-feminized version of the female form. Waists are regularly cinched to absurd levels, while breasts are accentuated, enlarged and brought to vivid life with ridiculous 'breast physics' engines.

Research shows that men exposed to images of sexualized women in video games are more likely to be tolerant of sexual harassment in real life, while male players who had been exposed to violent video games showed more tolerant attitudes towards rape; see Karen E. Dill-Shackleford, Brian P. Brown and Michael A. Collins, 'Effects of exposure to sex-stereotyped video game characters on tolerance of sexual harassment'.

Panel 4: Pictured are Anne Tarver and Maria Halperin in *Virginia* (2016), a creepy and inexplicable mystery game with a *Twin Peaks / X-Files* vibe. See also *Gone Home* (2013), *Hellblade: Senua's Sacrifice* (2017), *Florence* (2018), *Celeste* (2018), *Knights and Bikes* (2019) and *A Plague Tale: Innocence* (2019).

Panel 5: Quote from Katha Pollitt, 'The Smurfette principle'. It is these attitudes that has made it harder for women to access games both as players and creators.

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Panel 1: Pictured is Vaas Montenegro in *Far Cry 3* (2012), the game's Indonesian villain who is portrayed as both scarred and mentally ill.

Panel 3: Pictured are Barret Wallace from *Final Fantasy VII* (1997), Cole from *Gears of War* (2006), and Balrog from *Street Fighter II* (1991). Quote from Sidney Fussell, 'Black characters must be more than stereotypes of the inhuman'.

Panel 4: Quote from ibid.

As Brie Code argues: 'The entertainment we consume is the framework through which we understand the world. It's where our unconscious biases are built. It's where we find role models. It's where we explore our options. It's how we connect with each other. Video games can be powerful' (Brie Code, 'A future I would want to live in'). That power should not be underestimated. The stereotypes examined here and seen throughout the media are far from harmless, and the choices of game designers, conscious or not, *are* political.

These games are part of a culture that tells us that women are objects designed (whether by God, evolution, or programmer) to please men and to be bent to their will. A culture that tells us women are inherently less capable than men, that they can follow and assist but not lead. These games are also part of a culture that portrays people of colour, and especially black men, as dangerous and less than human. All this in a world where black men are three times more likely than white men to die from police use of force, and five times more likely to be incarcerated. And from police brutality, to the refugee crisis, to torture at Abu Ghraib, these games are a part of a culture that desensitizes us to inhuman acts, and allows us to tolerate the treatment of others in ways we would never want to be treated ourselves.

As critic and game designer Leigh Alexander argues, while we have come to see games as 'utopias of freedom, fluidity, and determinism', the stark truth may be that they are actually spaces 'where humans re-enact superstitions, gender and race biases, and where we end up destined not to escape the constraints of reality but to dutifully imitate them' (Leigh Alexander, 'Games people play: Most of what we think we know about video games is wrong').

For police use of force statistics, see James W. Buehler, 'Racial/ethnic disparities in the use of lethal force by US police, 2010–2014', pp. 295–297. For incarceration statistics, see Leah Sakala, 'Breaking down mass incarceration in the 2010 Census: State-by-state incarceration rates by race/ethnicity'.

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Panel 1: Pictured are Dhalsim and T. Hawk from *Street Fighter II* (1991).

Panel 3: Quote from Melissa J. Monson, 'Race-based fantasy realm: Essentialism in the world of *Warcraft*', p. 62.

Panel 4: See ibid., p. 60.

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Panels 1–3: Pictured are *Assassin's Creed III: Liberation* (2012), *Papo & Yo* (2012), *Madden NFL 18* (2017). The scarcity of positive representations of women and people of colour should perhaps come as no surprise. These groups have been systematically excluded from the game industry, and technological industries in general. Currently only around 22 per cent of game developers in the US are female and only 1 per cent are African-American. While studios seem to be taking steps to increase the diversity of representation, for change to happen it's not enough for these predominantly white and male studios to feature more diverse characters. They need to hire more diverse teams.

Panel 4: Quote from Muriel Tramis in Tristan Donovan, *Replay: The History of Video Games*, p. 127.

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Panel 1: Quote from Elizabeth M. Reid, 'Text-based virtual realities: Identity and the cyborg body', p. 328.

Panel 3: Quote from Laura Kate Dale, 'How *World of Warcraft* helped me come out as transgender'.

Panel 4: Quote from 'Ellivara' in Ian Frisch, 'Using RPG video games to help with gender dysphoria'.

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Panel 2: Pictured is game designer and critic Mattie Brice.

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Panel 2: Clouds over Sidra (2015) directed by Gabo Arora and Chris Milk.

Panels 3–4: Quotes from Robert Yang, '"If you walk in someone else's shoes, then you've taken their shoes": Empathy machines as appropriation machines'.

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Panel 2: The game pictured is *Tempest* (1981). Quote from William Gibson in Martti Lahti, 'As we become machines: Corporealized pleasures in video games', p. 157.

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Panel 1: Pictured is *Tacoma* (2017).

Panel 4: Game pictured here, clockwise from top left, are: *Celeste* (2018), *Oddworld: Abe's Oddysee* (1997), *Ms Pac-Man* (1982), *Getting Over It with Bennett Foddy* (2017), *Madden NFL 18* (2018), *Hollow Knight* (2017), *Undertale* (2015), *Assassin's Creed III: Liberation* (2012), *Mirror's Edge* (2008), *Cuphead* (2017), *Journey* (2012), *Donkey Kong* (1981), *Untitled Goose Game* (2019), *Virginia* (2016), *Final Fantasy VII* (1997), *Horizon Zero Dawn* (2017), *Left 4 Dead 2* (2009), *Tomb Raider* (1996), *Bioshock 2* (2010).

As Janet H. Murray puts it, 'In computer games we do not settle for one life, or even one civilization; when things go wrong or when we just want a different version of the same experience, we go back for a replay' (Janet H. Murray, *Hamlet on the Holodeck: The Future of Narratives in Cyberspace*, p. 155).

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Pictured, from top to bottom, are Nathan Drake in *Uncharted: Among Thieves* (2009), *Q*Bert* (1982), *Space Invaders* (1978), a chessman, a knucklebone, and a seed used for mancala.

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Panel 2: Quote from Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture*, p. 8.

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Panel 4: In 1904, outspoken American progressive Lizzie Magie invented *The Landlord's Game* to simulate the insidious dangers of capitalism to its players. Travelling around the board, players compete to buy up land and utilities in a race to dominate the market. If this sounds familiar, it's because the game is a precursor to *Monopoly*.

But while *Monopoly* has become what historian Steven Johnson calls an 'emblem of sporty capitalist competition' (Steven Johnson, *Wonderland: How Play Made the Modern World*, p. 180), Magie had a different idea in mind for *The Landlord's Game*. It's no accident that its capitalist simulation syphons wealth to a lucky few: *The Landlord's Game* is designed to foster misery and discord between its players; 'Let the children once see clearly the gross injustice of our present land system and when they grow up, if they are allowed to develop naturally, the evil will soon be remedied' (ibid., p. 182).

The story ends with bitter irony. Designed as a cultural critique, Magie's game only achieved fame when salesman Charles

Darrow repackaged it as the celebration of American free-market capitalism that we know today. For more on *The Landlord's Game* and *Monopoly*, see Mary Pilon, *The Monopolists: Obsession, Fury, and the Scandal Behind the World's Favorite Board Game*.

Panel 5: Pictured is *Fortnite* (2017)

Panel 6: The story of *Tetris* (1984) is just as fascinating as that of *Monopoly*. The game was created by Alexey Pajitnov while working in artificial intelligence in Soviet Russia. A hit with colleagues, the game began to spread onto new machines, and then across the Soviet Union. What ensued was a scramble for legal rights as publishers across the world tried to bring this addictive game to market. Unsure what to do, and trapped in the system in which he lived, Pajitnov gave the rights to the Soviet government for ten years. When the government sold the rights to Nintendo, *Tetris* became a colossal hit, coming bundled with every Game Boy.

It wasn't until 1996 that the rights for the game reverted to Pajitnov. In all those years, while others became rich off his creation, his smash-hit game had made him very little money. This story is excellently covered in Box Brown, *Tetris: The Games People Play*.

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Panel 1: In 1977, with Crowther's blessing, Don Woods worked to expand the game further, adding fantasy elements and more things to discover.

Panel 4: *Adventure*'s impact was almost immediate, inspiring further text adventures like *Zork* (1977) and *Adventureland* (1978), as well as graphical adventure games like Warren Robinett's *Adventure* (1979) and Roberta Williams's *Mystery House* (1980). Developed for Atari, Warren Robinett's *Adventure* has its own special place in video game history. At the time, Atari was unwilling to credit any of its creators for fear of them being poached by other companies. Unhappy, Robinett placed a hidden room in *Adventure*'s digital dungeon, complete with flashing text reading 'Created by Warren Robinett'. This was gaming's first 'Easter egg' – a hidden element that only the most dedicated and inquisitive players would find.

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Panel 2: Quote from Shigeru Miyamoto in Nathan Altice, *I Am Error: The Nintendo Family Computer / Entertainment System Platform*, p. 189.

The vast spaces that unfolded in games like *The Legend of Zelda* (1986) were made possible thanks to a technological innovation. For *Zelda*, Nintendo introduced a battery to the cartridge, which allowed players to save their game in progress. Without the pressure to finish in one sitting, it allowed games to last for hours longer, opening up new realms of possibility; see Chris Kohler, *Power-Up: How Japanese Video Games Gave the World an Extra Life*, p. 204.

Panel 3: Quote from Chaim Gingold, 'Miniature gardens & magic crayons: Games, spaces, & worlds', p. 20.

Panel 4: Miyamoto's work on Mario's game world is just as iconic. Scrolling sideways like a Japanese scroll painting, Mario's world was constructed on basic principles which worked together to create complex, addictive gameplay. As journalist Nick Paumgarten puts it: 'The game had just fifteen or twenty dynamics in it – how the mushrooms work, how the blocks react when you hit them – yet they combined in such a way to produce a seemingly limitless array of experiences and moves, and to provide opportunities for an alternative, idiosyncratic style of play, which brings to mind nothing so much as chess' (Nick Paumgarten. 'Master of play: The many worlds of a video-game artist').

PAGE 78
Panel 1: The importance of music in helping to build video game worlds can't be discounted. In *Super Mario Bros.* (1985) the two main themes thematically mirror the worlds they represent. The surface world theme is always rising, its notes bouncing up and down like Mario leaping from platform to platform. Meanwhile, the underworld theme uses descending notes to heighten the sense of danger, creating a sense that this space may well be inescapable.

Panel 3: Quote from Tristan Donovan, *Replay: The History of Video Games*, p. 167.

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Panel 1: Postcards reference the Wasteland in *Fallout* (1997), Los Santos in *Grand Theft Auto V* (2013), Hyrule in *The Legend of Zelda* (1986), *Silent Hill* (1999), City 17 in *Half-Life 2* (2004), Altissia in *Final Fantasy XV* (2016), Myst Island in *Myst* (1993), Norrath in *EverQuest* (1999), and Reach in *Halo: Reach* (2010). Quote from Simon Parkin, *Death by Video Game*, p. 85.

Panel 2: Pictured is *The Elder Scrolls V: Skyrim* (2011).

Panel 3: Pictured is *Assassin's Creed Origins* (2017). While *Assassin's Creed* may be a thriller of murder and intrigue, its developers have become increasingly aware of its responsibility for educating players about history. The *Assassin's Creed*

games *Origins* (2017) and *Odyssey* (2018) offer a mode that strips away the violence to give players a chance to walk the streets of ancient Memphis or the islands of Greece, learning ancient history along the way.

Oregon Trail was a government-sponsored game that gave young players in 1970s and 1980s America a chance to learn about the American frontier in an interactive environment. Today, games like *Kursk* (2018), *1979 Revolution: Black Friday* (2016) and the *Assassin's Creed* series make history that bit more tangible. Immersion puts our feet on the ground, in a doomed submarine, the revolutionary streets of Tehran, and anywhere from Renaissance Italy to ancient Egypt.

Panel 4: Pictured is *Monument Valley* (2014). Other twisting or impossible game landscapes include the repeating structures of *Manifold Garden* (2019), the supernatural brutalist architecture of *Control* (2019) and the clockwork mansion from *Dishonored 2* (2016).

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While games encourage us to explore, they also encourage us to *colonize*. From board games like go and *Settlers of Catan* (1995) to video games like *Seven Cities of Gold* (1984) and *Starcraft* (1998), games have long been fascinated by spatial conflict.

The historical sim *Civilization* (1991) sees players leading a historical culture through eras of warfare and technological and cultural development. Underlying its satisfying tactical gameplay, the game portrays its isometric landscapes as spaces to be conquered and colonized; their people, resources to be exploited and enveloped. A compelling insight into the history of expanding civilizations, the game also reinforces colonial ideologies and frames the relationship between global cultures as inherently hostile and competitive. A zero-sum game that needs to be won.

Panel 2: For more on exploration in video games, see Gernot Hausar, 'Players in the digital city: Immersion, history and city architecture in the *Assassin's Creed* series', p. 182.

Panel 3: See Chris Higgins '*No Man's Sky* would take 5 billion years to explore'.

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Panel 5: Referenced is the mist-shrouded horror of *Silent Hill* (1999). As theorist Clara Fernández-Vara argues, these games hark back to the labyrinths of ancient literature, their minotaurs replaced by more modern monsters (Clara Fernández-Vara, 'Labyrinth and maze: Video game navigation challenges', p. 74). For more on the potential of video game spaces, see Michael Nitsche, *Video Game Spaces: Image, Play, and Structure in 3D Worlds*.

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Panel 4: See Henry Jenkins, 'Game design as narrative architecture', p. 126.

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Panel 7: Quote from Leigh Alexander, 'Home is where the future of games is'.

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Panel 1: *SimCity* (1989) is a classic example of a 'god game', a game that bestows players with omnipotent power, allowing them to shape the lives and landscapes of a virtual world. Other examples include *Populous* (1989), *Black & White* (2001) and *Spore* (2008).

Panel 2: Quote from Chaim Gingold, 'Miniature Gardens & Magic Crayons: Games, Spaces, & Worlds', p. 25.

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Panel 1: Quote from Paul Starr, 'Seductions of sim: Policy as a simulation game', p. 19.

Panel 3: See Ted Friedman, 'The semiotics of *SimCity*'.

Panel 5: *SimCity*'s vision of city management is darkly echoed by architecture student Vincent Ocasla's Magnasanti, a super-efficient, hyper-populated city built in *SimCity 3000* (1999). As Ocasla puts it, hidden under his city's illusion of order and greatness lie 'suffocating air pollution, high unemployment, no fire stations, schools, or hospitals, a regimented lifestyle' (quoted in Mike Sterry, 'The totalitarian Buddhist who beat *Sim City*'). It's a wonderful satire of the technocratic vision of a perfectly ordered, efficient society. A city perfect in every way but for the misery its citizens face.

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Panel 1: Quote from Simon Parkin, *Death by Video Game*, p. 71. Researcher Jules Skotnes-Brown offers a more critical perspective of what games like *Minecraft* offer: 'In an era where physical space has been thoroughly explored, virtual spaces

harken back to the romance of the colonial frontier – as new regions to discover and conquer … In sandbox-building games such as *Minecraft*, the player arrives, like Robinson Crusoe, into a ***terra nullius*** and encourages him to "improve" this land – by clearing jungles, draining marshes, building infrastructure and mining minerals. Its inhabitants – hostile monsters or local villagers – appear simply as obstacles in the path of development, or as resources to exploit' (Jules Skotnes-Brown, 'Colonized play, racism, sexism and colonial legacies in the Dota 2 South African gaming community', p. 144).

Panel 4: See Selcuk Sirin, Jan L. Plass, Bruce D. Homer, Sinem Vatanartiran and Tzuchi Tsai, 'Digital game-based education for Syrian refugee children: Project Hope'.

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Panels 2–5: In the 1960s the Situationist movement emerged at a time of great social strife in France. With riots on the streets of Paris, it quickly became clear that the city itself was playing a part in social control. Like many cities, Paris was a city built with social control in mind. In the nineteenth century, Emperor Napoleon III ordered that Paris be rebuilt in a way that would help him retain power. Entire streets and neighbourhoods were razed and the city was reassembled with wide, luxurious boulevards. Aesthetically pleasing on one level, the true intention was to make a city in which it was hard for revolution to foment and succeed. Gone were the winding back alleys for revolutionaries to skulk and disappear into, gone were the narrow streets perfect for barricading, replaced by wide streets perfect for soldiers and cavalry to march down (Geoff Manaugh, *A Burglar's Guide to the City*, p. 235).

Panel 6: Quote from Attila Kotányi and Raoul Vaneigem, 'Unitary urbanism', p. 26.

Panel 7: Pictured is *Half-Life 2* (2004). For author Cory Doctorow, our interest in dystopian fiction is a dangerous one: 'Here's how you make a dystopia: Convince people that when disaster strikes, their neighbors are their enemies, not their mutual saviors and responsibilities. The belief that when the lights go out, your neighbors will come over with a shotgun – rather than the contents of their freezer so you can have a barbecue before it all spoils – isn't just a self-fulfilling prophecy, it's a ***weaponized narrative***. The belief in the barely restrained predatory nature of the people around you is the cause of dystopia, the belief that turns mere crises into catastrophes' (Cory Doctorow, 'Disasters don't have to end in dystopias').

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Panel 1: The *Grand Theft Auto* series started life thousands of miles from the US cities in which the games are set, in Dundee, Scotland. David Jones was a bedroom coder whose game *Menace* (1988) led him to found DMA Design with Russell Kay, Steve Hammond and Mike Dailly. After the smash-hit success of their charming and addictive rodent survival game *Lemmings* (1991), Jones turned his attention to the idea of a top-down fighting and driving game set in a city. Over the next few years this idea would be developed into what became *Grand Theft Auto* (1997).

The series wouldn't take the form we know today until *Grand Theft Auto III* (2001), created by a team of twenty-three people working from the DMA Design studios in Edinburgh. The game was now played from the third-person perspective, in an immersive 3D environment which players could explore at their leisure. Over the years that followed, further sequels were made, each building on the anarchic, playful and violent spirit of the original.

Panel 3: For more on this subject see Mark Teo, 'The urban architecture of *Grand Theft Auto*'.

Panel 7: Critic and game designer Leigh Alexander offers a more critical opinion of *Grand Theft Auto*'s freedom: 'This game gives me everything, and yet I can't stop feeling sad. Trapped' (Leigh Alexander, 'The tragedy of *Grand Theft Auto V*').

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Panel 5: See Ian Bogost, 'Persuasive games: Windows and *Mirror's Edge*'. For Bogost, *Mirror's Edge* is 'a game about looking and moving in an unfamiliar way, about feeling frail when we are used to feeling powerful, and then feeling powerful again when we reject the convention to fight and choose instead to run like hell' (ibid.).

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Panel 4: It's worth paying attention to the fact that these games prominently feature female protagonists. Here, macho violence is seen as a destructive force that achieves nothing. Subversive movement is the only route to revolution.

PAGE 94

Panel 2: Speedrunning is a sort of countercultural sport, a digital parkour that sees players training for days and weeks to shave milliseconds off of previous records; see David Snyder, *Speedrunning: Interviews with the Quickest Gamers*, p. 208.

Panel 3: Pictured is *Mega Man* (1987).

The world of speedrunning is broken into various categories. The main ones are: 'Any%', where players can take advantage of glitches and various exploits to get to the end of the game as quickly as possible; and '100%', where players try and fully

complete the game in the fastest time.

'Tool-assisted speedruns' allow runners to use software and hardware to break the game down in aid of their speedrun. At times these exploits threaten the very integrity of the game world. As theorist Seb Franklin writes of a *Mega Man* speed run: 'The screen flickers and distorts, walls and platforms cease to function as they should, artefacts of various screen elements, and sometimes pure digital noise, appear at unexpected places on the screen, and in particularly extreme case[s] the soundtrack lapses into harsh, modem-like tones as a result of the abusive gameplay taking place' (Seb Franklin, '"We need radical gameplay, not just radical graphics": Towards a contemporary minor practice in computer gaming', p. 175).

Panel 4: Quote from Danielle Riendeau, 'How a speedrunner broke *Prey* in three days'.

PAGE 96
Panel 1: Pictured is the gravity-defying adventure game *Gravity Rush 2* (2017).

Panel 5: Everybody's Gone to the Rapture plays out like a supernatural episode of British radio drama *The Archers*. It's a fascinating experiment in interactive theatre with a powerful emotional payoff.

PAGE 97
Referenced in the background, from top to bottom, are: alien invaders from *Space Invaders* (1978), the Umbrella Corporation from *Resident Evil 2* (1998), *Donkey Kong* (1981), Ryan Industries from *Bioshock* (2007), Chell from *Portal* (2007), Ida from *Monument Valley* (2014), the Citadel from *Half-Life 2* (2004), Union Aerospace from *Doom* (1993), Abstergo Industries from *Assassin's Creed* (2007), a Sim from *The Sims* (2000), Solid Snake from *Metal Gear Solid* (1998), Joja Mart from *Stardew Valley* (2016), a warthog from *Halo: Combat Evolved* (2001), *Pac-Man* (1980), a survivor from *Fallout 3* (2008), Niko Bellic from *Grand Theft Auto IV* (2008), Gomez from *Fez* (2012), blocks from *Minecraft* (2011).

PAGE 100
Panel 2: Pictured is the Greek philosopher Leucippus, said to have originated the theory of atomism along with his pupil Democritus. Atomism is the idea that the world is made up of invisible and indestructible elements called atoms, which obey certain deterministic laws. Thus, with everything in the world predetermined at an atomic level, there could be no free will and thus no choice.

PAGE 101
Panel 2: Pictured on this ancient pot are Greek heroes Ajax and Achilles absorbed in a game of petteia between battles during the Trojan war.

PAGE 102
Panel 1: As Warren Spector puts it: 'Simulations allow players to explore not just a space but a "possibility space." They can make their own fun … tell their own stories … solve problems the way they want and see the consequences of their choices. That's the thing that games can do that no other medium in human history has been able to do' (Warren Spector, 'Hi, I am Warren Spector …'). For more on the concept of 'possibility spaces', see Ian Bogost, 'Persuasion and gamespace', p. 306.

PAGE 103
Panel 3: Pictured is Cloud Strife from *Final Fantasy XV* (2016).

Panel 4: Pictured is a character-creation screen from *Fallout 3* (2008).

Panel 6: See Greg Lastowka, 'Utopian games', p. 143.

PAGE 104
Panel 1: The depth and breadth of games like this cannot be understated. The script of *Mass Effect* (2007) was 300,000 words long, longer than the average novel; see Tom Bissell, *Extra Lives: Why Video Games Matter*, p. 112.

Panel 2: In *Mass Effect*, players playing as the female Commander Shepard were also able to romance Liara T'Soni, pictured. *Mass Effect 2* (2010) introduced more romance options but again confined the male Shepard to heterosexual relationships. It was only in *Mass Effect 3* (2012) that the male Shepard could finally romance men and women.

PAGE 105
Panel 1: Pictured is *Valkyrie Profile* (1999).

Panel 2: The same often goes for how players might reflect their own race, gender or bodily characteristics, even in role-playing games that boast of highly detailed character creation abilities.

Panel 3: *Fable* (2004) featured the ability for its male hero to romance and marry either male or female characters. According to creative director Dene Carter, this element was not necessarily planned, but emerged as a result of the villagers' artificial intelligence, which allowed them to be attracted to the hero regardless of their gender. As Carter states, 'We'd have had to write extra code to remove that in the case of same-sex interactions. This seemed like a ridiculous waste of time' (quoted in Bryan Ochalla, 'Boy on boy action: Is gay content on the rise?').

Since its release in 2000, *The Sims* series has gradually become one of the most inclusive mainstream video games out there, with *The Sims 4* (2014) allowing players to romance all genders, letting both male and female Sims become pregnant, and allowing players to style any gender of Sim with any type of clothing, physique or voice options.

Panel 4: According to the LGBTQ Game Archive, *Caper in the Castro* (1989) is the oldest known example of a gay-and-lesbian-themed video game. The game involves a lesbian detective tracking down a missing drag queen in San Francisco's gay village. Written as a love letter to the community at the height of the deadly AIDS epidemic, the game became a hit in the LGBTQ community.

A 'straight' version of the game was also created by Ralph to sell to mainstream audiences. As Ralph herself puts it: 'I took out all the references to the Castro, all the inside jokes, everything, and I renamed it *Murder on Main Street*. I sold it to Heizer Software, and I made, I mean, not a lot of money, but I made a steady income for many years from that program. It always cracked me up that these people were loving this game and buying it and had no idea it was actually an LGBT game' (quoted in Adrienne Shaw, '*Caper in the Castro*').

Sadly, even today, queer artists can struggle to find a platform for their work. Robert Yang's work has faced censorship on streaming platform Twitch, which has banned his games for nudity. *The Tearoom* (2017) attempts to overcome this in a striking way. As Yang puts it: 'to appease this oppressive conservative gamer-surveillance complex, I have swapped out any pesky penises in my game for the only thing that the game industry will never moderate nor ban – guns. Now, there's nothing wrong with guys appreciating other guys' guns, right?' (Robert Yang, '*The Tearoom*').

PAGE 106

Panel 2: Pictured is the tense survival horror game *Amnesia: The Dark Descent* (2010).

Panel 5: See Espen J. Aarseth, *Cybertext: Perspectives on Ergodic Literature*, p. 10.

Amazingly, the *I Ching* not only pioneered interactive storytelling, but also inspired Gottfried Wilhelm Leibniz's prophetic invention of the binary numeral system in the 1670s, a system which underpins all computing technology we know today.

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Panel 1: In the cinema, the Czech movie *Kinoautomat* (1967) attempted the same for the moving image, requiring viewers to vote during the movie on which outcome they wanted. Dull and unwieldy, the gimmick never caught on. Recently, Netflix has attempted to reboot the idea with interactive shows like *Black Mirror: Bandersnatch* (2018), to some acclaim.

Elsewhere, Raymond Queneau, *Cent mille milliards de poèmes* (*A Hundred Thousand Billion Poems*) presents ten sonnets, with each line printed on a separate strip of card. By shuffling the strips, billions of different poems can emerge. Queneau estimated that it would take 200 million years to read them all.

PAGE 108

Panel 2: For player numbers see Stewart Alsop II, 'TSR Hobbies mixes fact and fantasy'.

PAGE 109

Panel 1: Referenced is the box art for *Zork* (1977).

Panel 3: The choose-your-own-adventure text game is alive and well today, a fact brilliantly illustrated by *Stories Untold* (2017), a game by Scottish developer No Code. The game comprises four short text adventure games with a twist. In my favourite, *The House Abandon,* you boot up an old PC to play a text-adventure game, with creepy consequences for the world around you.

Panel 5: For more on the thriving hobbyist game communities of the early home computer era, see Tristan Donovan, *Replay: The History of Video Games*, pp. 111–23.

These games were notable for their absurdist humour, Dadaist imagery and experimental approaches. *Pimania* (1983) involved a real-life treasure hunt for a golden sundial buried somewhere in the UK, with clues provided in-game. In *Captain Blood* (1988) players communicate with aliens via an icon-based system, with different species reacting to different ways of communicating. *Deus Ex Machina* (1984) followed the life cycle of a defective machine and was accompanied by a separate audio-cassette soundtrack that needed to be played simultaneously.

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Panel 5: Interactive dramas like *Until Dawn* (2015) have had a resurgence of late. The genre first came to prominence in

the 1980s and 1990s as Laserdiscs and CDs made it possible to store low-resolution full-motion video. Games like the Don Bluth-animated *Dragon's Lair* (1983), ropey horror game *Night Trap* (1992) and Roberta Williams's *Phantasmagoria* (1995) combined player choice with pre-recorded video sequences.

More recently, games like *Heavy Rain* (2010), *The Walking Dead* (2012) and *Detroit: Become Human* (2018) have presented players with cinematic stories full of tough choices, branching narratives and devastating opportunities for failure.

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Panel 4: Historian J. C. Herz puts the appeal of video game failure beautifully: 'The most intense thing about *Missile Command*, though, was this weird crazy moment near the end, when the ICBMs were raining down and you know you were just going to lose it, that was totally euphoric. Because you knew that you were gonna die, that you were within seconds of everything going black … You're dying. You're dead. And then you get to watch all the pretty explosions. And after the fireworks display, you get to press the restart button, and you're alive again, until the next collision with your own mortality. You're not just playing with colored light. You're playing with the concept of death. For a little kid this is endlessly fascinating' (J. C. Herz, *Joystick Nation: How Videogames Ate Our Quarters, Won Our Hearts and Rewired Our Minds*, p. 64).

Panel 5: For some, there's a certain appeal to when our mistakes have consequences. In Bennett Foddy's *Getting over It* (2017) you play as Diogenes, a bald, silent man who sits in a cauldron, attempting to ascend a mountain by using a sledge-hammer to lever and bounce your way up, rock by rock and obstacle by obstacle.

As Foddy puts it in the game's narration, 'most obstacles in video game worlds are fake. You can be completely confident in your ability to get through them once you have the correct method, or the correct equipment, or just by spending enough time.' But here the smallest miscalculation will see you plummeting down the mountain. Hours of struggle lost in a second. It's a game designed to foster frustration and to reward success in a way other games can't. Most won't make it to the summit, but for those who do, the sense of accomplishment is real.

Panels 6–8: Referenced are the *Grand Theft Auto* series, *The Last of Us* (2013) and *The Oregon Trail* (1971). Quote from Jesper Juul, *The Art of Failure: An Essay on the Pain of Playing Video Games*, p. 122.

PAGE 112

Panel 1: A gamer's relationship with time can be all kinds of twisted. It's easy to lose afternoons or whole days sucked into play, and a game often seems 'to have temporal rules of its own, like those of a dream' (Sue Morris, 'First-person shooters: A game apparatus', p. 88).

Many games play with time in interesting ways. *Braid* (2008) allows the player to stop and rewind time in a series of temporal challenges. *Superhot* (2016) is a stylish first-person shooter where time only moves if you move, resulting in a series of tense, fast-slow-fast action puzzles. *Return of the Obra Dinn* (2018) tasks players with revealing what happened to the mysterious ship, giving players the ability to flash back to the frozen moment of death of each crew member. *The Occupation* (2019) is a real-time investigation game set over one four-hour period, in a world that unwinds with or without the player's interaction. Meanwhile, games like *Minit* (2018) and *The Outer Wilds* (2019) trap you in an endlessly repeating time loop of a single minute and twenty-two minutes respectively.

Panel 3: Pictured is *Time Crisis* (1995).

Panel 5: Referenced is, of course, *Tomb Raider* (1996). Quote from Brendan Keogh, *A Play of Bodies: How We Perceive Videogames*, p. 140.

PAGE 113

Panel 1: Top of page text, quote from Miguel Sicart, *Beyond Choices: The Design of Ethical Gameplay*, p. 102.

PAGE 114

Panel 1: Pictured is Wilson in *Don't Starve* (2013). The game *Rogue* (1980) was the first of its kind – a procedurally generated dungeon crawling game where player death was permanent. The game spawned a genre known as 'roguelike', which thrives to this day with games like *Dwarf Fortress* (2006) and *FTL: Faster than Light* (2012).

Panel 4: Our fascination with death in games may be more than just morbid curiosity. From a young age, children become fascinated by death. In games of hide-and-seek and tig, death is the morbid subtext, and games of killing and dying can become an obsession.

Even in the ghettos and concentration camps of the Third Reich children would play games like this. As psychologist Peter Gray notes, 'parents tried desperately to divert their children's attention from the horrors around them and to preserve some semblance of the innocent play the children had known before … But the children would have none of that. They played games designed to confront, not avoid, the horrors' (Peter Gray, *Free to Learn: Why Unleashing the Instinct to Play Will Make Our Children Happier, More Self-Reliant, and Better Students for Life*, p. 169).

Tig turned into 'Jews and Gestapomen'. Hide-and-seek came to echo the terror of round-ups and raids. 'Klepsi-Klepsi' re-created the everyday realities of starvation and Nazi brutality. In a brutal environment, these children were turning to games of death to understand their world. It gave them a chance to look death in the eye. To play it out. To diminish its terror (ibid.).

For more on death-play, see Paul Shepard, *The Tender Carnivore and the Sacred Game*, pp. 196-199.

PAGE 115
Panel 1: Referenced is *Red Dead Redemption 2* (2018).

Panel 2: Pictured is the young hero from *Fable* (2004).

Panel 3: Pictured is the vampiric Jonathan Reid from *Vampyr* (2018). In the game, the player-character must wrestle between their thirst for blood and their belief in the sanctity of human life. Each life claimed in the game can have knock-on effects for the game world.

Panel 5: Quote from Miguel Sicart, *Beyond Choices: The Design of Ethical Gameplay*, p. 102. Pictured is *Infamous* (2009).

PAGE 117
Panel 3: Quote from Hannah Arendt, *Eichmann in Jerusalem: A Report on the Banality of Evil*, p. 289.

PAGE 118
Panel 3: Quote from 'Tomorrowed' [Kalle MacDonald], 'ICYMI: *Localhost* (2017)'.

PAGE 121
Panel 5: Quote from Matthew Wysocki and Matthew Schandler, 'Would you kindly? *Bioshock* and the question of control', p. 205.

PAGE 123
Panel 2: Quote from Miguel Sicart, *Beyond Choices: The Design of Ethical Gameplay*, pp. 113–14.

Panel 3: Quote from Walt Williams in Brendan Keogh, '*Spec Ops: The Line*'s conventional subversion of the military shooter', p. 8.

PAGE 127
Panel 2: Quote from Dylan Klebold in Eric Harris and Dylan Klebold, 'The basement tapes'.

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Panels 1–3: As book printing became cheaper, many feared the potentially corrupting influence that the easy spread of new ideas might have. 'Penny dreadfuls' were cheap and salacious novels about murderers, outlaws, monsters and cowboys that thrilled readers but worried the upper classes.

In the 1930s, as radio became a staple in homes, some began to worry about the pernicious effects of this new fad. Journalist Anne O'Hare McCormick wrote that 'On the radio we are purely receptive … it satisfies a growing inclination for vicarious activity, for "something doing" without doing it. This passivity is a kind of measure of the electric moment in which we live and its dazing, almost anaesthetic effect upon the mind' (Anne O'Hare McCormick, 'The radio: A great unknown force').

In the 1980s fears over violent and explicit movies like *Zombie Flesh Eaters* (1979) and *Cannibal Holocaust* (1980) reached fever-pitch as the new VHS medium made them easier to see than ever before.

Panel 5: See Rupert Gethin, *Sayings of the Buddha: New Translations from the Pali Nikayas*, p. 21.

Panel 7: Quote from the Quran, 5:91.

PAGE 129
Panel 1: Quote from H. J. R. Murray, *A History of Chess: The Original 1913 Edition*, p. 381; see also note to pages 14–15, panel 7, above.

Panel 4: Quote from Gary Greenwald. in *Deception of a Generation: Part I* (1984).

PAGE 130
Panel 1: Pictured is a cabinet for *Splatterhouse* (1988).

Panel 5: Quote from Gerald Driessen in Ralph Blumenthal, '*Death Race* game gains favor, but not with the Safety Council'.

PAGE 131

Panel 1: Headline from *The New York Times* staff, 'Surgeon general sees danger in video games'. Quote from C. Everett Koop in Peter Mattiace, 'Video games don't thrill surgeon general'.

Panel 3: Quote from Joe Lieberman in Tristan Donovan, *Replay: The History of Video Games*, p. 225.

Panel 5: Quote from Joe Baca in Brian J. Wardyga, *The Video Games Textbook: History, Business, Technology*, p. 172. Headline from Richard Price and Neil Sears, 'Ban These Evil Games'.

PAGE 132

Panel 1: Quote from Simon Parkin, *Death by Video Game*, p. 123. Referenced in the background are: *Space Invaders* (1978), *Goldeneye 007* (1997), *Half-Life* (1998), *The Legend of Zelda: Breath of the Wild* (2017), *Super Mario Bros.* (1985), *Doom* (1993), *Minecraft* (2011) and *Halo 2* (2004).

Panel 3: Quote from David Sudnow, *Pilgrim in the Microworld*, p. 18.

PAGE 133

Panel 1: Information from APA Task Force on Violent Media. 'Technical report on the review of the violent video game literature', p. 11.

It's important to note that these studies are normally conducted in laboratory conditions, where 'aggressive behaviour' means the participant is asked to carry out a mundane form of aggression, for example administering hot sauce or a loud noise to another person. They also tend to lump together cartoon violence with realistic violence. For more on this, see Patrick M. Markey, Charlotte N. Markey and Juliana E. French, in 'Violent video games and real-world violence: Rhetoric versus data', p. 279.

However, the violence in games is certainly not without its effects. Some artists working on *Mortal Kombat 11* (2019) were diagnosed with post-traumatic stress disorder after having worked on the game's gory fatalities. Their work required them to immerse themselves in violent imagery: reviewing gory cutscenes frame by frame, and watching real-life violence for reference and inspiration. As one anonymous artist put it: 'You'd walk around the office and one guy would be watching hangings on YouTube, another guy would be looking at pictures of murder victims, someone else would be watching a video of a cow being slaughtered … The scary part was always the point at which new people on the project got used to it. And I definitely hit that point' (quoted in Joshua Rivera, '"I'd have these extremely graphic dreams": What it's like to work on ultra-violent games like *Mortal Kombat 11*').

Panel 2: See Patrick M. Markey and Christopher J. Ferguson, *Moral Combat: Why the War on Violent Video Games Is Wrong*, p. 85.

Panel 3: See Patrick M. Markey, Charlotte N. Markey and Juliana E. French, in 'Violent video games and real-world violence: Rhetoric versus data', p. 285.

Panel 4: See Patrick M. Markey and Christopher J. Ferguson, *Moral Combat: Why the War on Violent Video Games Is Wrong*, p. 83. For more on the issue, see Christopher John Ferguson, 'The good, the bad and the ugly: A meta-analytic review of positive and negative effects of violent video games'. Pictured is *Virtua Cop* (1994).

PAGE 134

Panel 1: Quote from Wayne LaPierre in Simon Parkin, 'Shooters: How video games fund arms manufacturers'.

Panel 2: Quote from Katherine Cross, 'No, Mr Trump, video games do not cause mass shootings'.

Panel 3: Pictured is a soldier from *Call of Duty: Black Ops 4* (2018).

Panel 4: Quote from Ralph Vaughn in Simon Parkin, 'Shooters: How video games fund arms manufacturers'.

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Panel 1: See Katherine S. Newman et al. *Rampage: The Social Roots of School Shootings*.

Panels 2–3: Quote from ibid., p. 230. Pictured are Neo from the Wachowskis' 1999 movie *The Matrix* and the eponymous Duke Nukem from *Duke Nukem 3D* (1996).

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Panel 3: See William Poundstone, 'Game theory'.

PAGE 137

Panel 3: *Tennis for Two*'s creator William Higinbotham had even been a part of the Manhattan Project, working on the ignition device for the atomic bomb. He spent much of his later life fighting for nuclear non-proliferation.

Panel 4: This relationship between computer games and more serious simulations has always been there. *Tennis for Two* harnessed technology designed to calculate missile trajectories and simulate rocket flight. By the 1950s and 60s computers were being used to predict the weather, the economy and ecosystems. But the playful potential of simulations remained. In 1969, as NASA was using computers to simulate rocket launches and land men on the moon, the text-based game *Lunar* was allowing university students a chance to try and do the same. And today, while the CDC uses computers to model and predict disease outbreaks, games like *Plague Inc.* (2012) allow players to craft their own diseases and spread them across the globe using similar simulations.

Panel 5: Quote from Ed Rotberg in Tristan Donovan, *Replay: The History of Video Games*, p. 85.

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Panel 1: See Rob Riddell, '*Doom* goes to war'.

Panel 3: Quote from P. W. Singer, 'Meet the Sims … and shoot them: The rise of militainment'. The developments in this field keep on coming. In 2019 Microsoft workers protested at a $479 million US Army contract the company had signed to supply the military with augmented reality headsets designed for training and combat. In an open letter, the group stated: 'we refuse to create technology for warfare and oppression' (quoted in Colin Lecher, 'Microsoft workers' letter demands company drop Army HoloLens contract').

The technology includes a heads-up display not dissimilar to those already seen in video games. Soldiers would be able to view a mini-map, compass and locations of other squad mates while in combat. For the army it's a chance to provide 'increased lethality, mobility, and situational awareness' to their soldiers (Sean Hollister, 'Here's the US Army version of HoloLens that Microsoft employees were protesting').

But for the protesting Microsoft workers, 'The application of HoloLens within the IVAS system is designed to help people kill. It will be deployed on the battlefield, and works by turning warfare into a simulated "video game", further distancing soldiers from the grim stakes of war and the reality of bloodshed' (quoted in Colin Lecher, 'Microsoft workers' letter demands company drop Army HoloLens contract').

Panel 4: Quote from drone pilot in P. W. Singer, 'Meet the Sims … and shoot them: The rise of militainment'. In 2010, the UN released a report on the growing use of armed drones by the US military, stating: 'Because operators are based thousands of miles away from the battlefield, and undertake operations entirely through computer screens and remote audio-feed, there is a risk of developing a "PlayStation" mentality to killing' (quoted in Charlie Savage, 'UN report highly critical of US drone attacks').

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Panel 3: See P. W. Singer, 'Meet the Sims … and shoot them: The rise of militainment'.

Panel 4: See Keith Stuart, '*Call of Duty: Advanced Warfare*: "We worked with a Pentagon adviser"'. Illustration based on *Battlefield 4* (2013).

This idea of 'militainment' isn't confined to video games alone. As I discuss in my book *Filmish: A Graphic Journey through Film* (SelfMadeHero, London, 2015), the Pentagon has had a say in the content of movies for decades. If a studio wants the assistance of the military in any way, producers must 'submit five copies of the script to the Pentagon for approval; make whatever script changes the Pentagon suggests; film the script exactly as approved by the Pentagon; and prescreen the finished product for Pentagon officials before it's shown to the public' (David L. Robb, *Operation Hollywood: How the Pentagon Shapes and Censors the Movies*, p. 25). This rigorous process ensures that military assistance only goes to movies that show the military in a purely positive light.

PAGE 140

Panel 1: Referenced is *Call of Duty: WWII* (2017).

Panel 2: Quote from Brendan Keogh, '*Spec Ops: The Line*'s conventional subversion of the military shooter', p. 2.

Panel 4: Occasionally a game will boast that it is taking war *very seriously indeed*, but it's always another marketing ploy. The reboot *Call of Duty: Modern Warfare* (2019) places you in the shoes of a child caught up in a massacre – yet it still plays out like a game, an overdramatic boss fight with win–lose mechanics; see Emma Kent, '*Call of Duty: Modern Warfare* and the problem with its child soldier level'.

Panel 5: Quote from Christian McCrea in Darshana Jayemanne, *Performativity in Art, Literature, and Videogames*, p. 163.

PAGE 142
Panel 1: Quote from Greg Lastowka, 'Utopian games', p. 144.

Panel 2: There are innumerable examples of pacifist ways to play violent games, including role-playing as a war photographer in *Day of Defeat* (2003), doing investigative journalism in brutal survival sim *Rust* (2013), or playing as a flower-picking panda in *World of Warcraft* (2004). Meanwhile, some potentially violent games offer pacifist options or encourage pacifist playthroughs. Notable examples include *Undertale* (2015), *Dishonored* (2012), and *Fallout: New Vegas* (2010); see Kent Sheely, 'DoD [2009–2012]'; Steven Messner, 'Meet *WoW*'s biggest hippie, a panda who reached max level by picking thousands of flowers'; 'Argyle Alligator', 'Rust interviews'.

Panel 3: Quote from Joseph DeLappe in Majed Athab, 'Winning hearts and minds: Wrestling with Fallujah in-game and in real life', p. 61.

Panel 4: The blog 'No Wrong Way to Play' chronicles other interesting ways players have attempted to interact with games, in ways never expected by or planned for by the developer: online at nowrongwaytoplay.tumblr.com (accessed 25 February 2020).

PAGE 143
Panel 2: Quote from Albert Einstein in David Shenk, *The Immortal Game: A History of Chess*, p. xvi.

Panel 3: Quote from David Sudnow, *Pilgrim in the Microworld*, pp. 43–4.

Panel 4: See Sue Morris, 'First-person shooters: A game apparatus', p. 87.

Panel 5: Quote from Jane McGonigal, *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*, p. 43.

Panel 6: Pictured is *Farmville* (2009). Games like this are known as 'clicker games', a genre that requires simple, repetitive interactions, and which deploy tiny hits of dopamine as you slowly unlock virtual rewards. The genre is beautifully parodied in *Universal Paperclips* (2017), a game in which the player is tasked with making paperclips. What starts as a simple cottage industry rapidly spirals out of control as the player enlists the help of artificial intelligence and mind control to improve business. Both a parody of a common game genre and a startling examination of the terrifying amoral potential of artificial intelligence, the game is an addictive and thought-provoking delight.

PAGE 144
Panel 2: This phenomenon is actually called the '*Tetris* effect'. It isn't quite understood why this happens, but may be due to the repetitions of the game inscribing themselves on our brain's procedural memory.

Panel 4: Quote from Brian Sutton-Smith in Jerry Adler, 'The Nintendo kid', p. 44.

Panel 7: For more on this, see Simon Parkin, *Death by Video Game*.

PAGE 145
Panel 1: Quote from game addict in Cecilia D'Anastasio, 'How video game addiction can destroy your life'.

Panel 2: Quote from John Beckman, *American Fun: Four Centuries of Joyous Revolt*, p. 316.

Panel 3: Quote from Christopher Ferguson in Ed Cara, 'Is video game addiction real?'.

PAGE 146
Panel 1: See Cecilia D'Anastasio, 'Sex, *Pong*, and pioneers: What Atari was really like, according to women who were there'.

Panel 3: The gamification seen in dating apps has its own alarming consequences. As writer Alfie Bown puts it, apps like Tinder promote 'the idea that women themselves can be played like a game … the user learns to treat relationships as a set of missions to complete' (Alfie Brown, 'Tech is turning love into a rightwing game').

Panel 4: Quote from Tristan Harris in Paul Lewis, '"Our minds can be hijacked": The tech insiders who fear a smartphone dystopia'.

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Panel 3: Pictured headlines, from left to right, are: Elena Cresci, 'Russian YouTuber facing five years in jail after playing *Pokémon Go* in church'; *BBC News* staff, 'US Holocaust museum asks *Pokemon Go* players to stop'; Alan Yuhas, '*Pokémon Go*: Armed robbers use mobile game to lure players into trap'; Jonathan Soble, 'Driver in Japan playing *Pokémon Go* kills pedestrian'; Mary Bowerman, 'Woman discovers body while playing *Pokémon Go*'; *BBC News* staff, 'Florida teens, mistaken for thieves, shot at playing *Pokemon Go*'; Heather Navarro, 'Man playing *Pokemon Go* stabbed in Anaheim Park'; *Guardian* staff and agencies, 'Man shot dead while playing *Pokémon Go* in San Francisco'; Helena Horton, '*Pokémon Go* addict stabbed while playing, refuses to get treatment so he can continue'.

Panel 4: See Sam Kriss, 'Resist *Pokémon Go*'.

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Panel 2: See Max Miller, 'The rise of virtual economies'.

Panel 4: See Annie Pei, 'This esports giant draws in more viewers than the Super Bowl, and it's expected to get even bigger'.

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See Ge Jin, 'Chinese gold farmers in the game world'; see also 'Calit2ube', 'Ge Jin, aka Jingle – Chinese gold farmers in MMORPGs'.

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Panel 2: According to research, female-voiced players online are three times more likely to receive negative comments as equally skilled players with male voices or non-speakers; see Jeffrey H. Kuznekoff and Lindsey M. Rose, 'Communication in multiplayer gaming: Examining player responses to gender cues'.

Panel 3: Quote from Mike Sholars, 'Gamers like Pewdiepie Are Why I Don't Play Online'.

Panel 4: Pictured are Zoë Quinn, designer of *Depression Quest* (2013), and Anita Sarkeesian, creator of the YouTube series 'Tropes vs. women in video games' (2013–17). Of course it's not just the groups mentioned who receive abuse; players from other marginalized groups commonly receive or overhear abuse in game spaces.

Panel 5: See Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture*, p. 12.

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Panel 1–3: Quote from ibid.

Panel 4: See Jennifer DeWinter and Carly A. Kocurek, '"Aw fuck, I got a bitch on my team!" Women and the exclusionary cultures of the computer game complex', p. 60.

Panel 5: Pictured is *Butterfly Soup* (2017).

Panel 6: This phrase comes from Kate Miltner: 'There's an adage that says, when you're used to privilege, equality feels like oppression. When you're used to being able to do and say whatever you want, being criticized for saying racist or misogynist things comes as a shock' (quoted in Colin Campbell, 'Gaming's toxic men, explained').

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Panel 2: Quote from Stuart Brown, *Play: How it Shapes the Brain, Opens the Imagination, and Invigorates the Soul*, p. 49.

Panel 4: See J. C. Rosser et al. 'The impact of video games on training surgeons in the 21st century'.

Panel 7: See Jake Offenhartz, 'How video games are helping young veterans cope'.

Games can also be used to help in scientific research. Games like *MalariaSpot Bubbles* (2016) and *FoldIt* (2008) use games to crowdsource research into diseases by getting players to identify patterns and analyse data as part of the gameplay.

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Panel 1: Quote from Stuart Brown, *Play: How it Shapes the Brain, Opens the Imagination, and Invigorates the Soul*, p. 49.

Panel 4: Quote from ex-inmate in C. J. Ciaramella, 'The radical freedom of *Dungeons & Dragons*'.

Panel 5: It's not just prisons where games save us. In Auschwitz, Elhanan Ejbuszyc offered to carve a chess set for one of the camp's cruellest guards in the hope of giving his fellow inmates a rest from the brutality. He carved a simple, beautiful chess board out of the guard's club but before being able to hand it over, was moved to a new camp where he brought the set with him. As Ejbuszyc put it: 'what I achieved – turning a tool of punishment into a tool of peace after breaking it into pieces and carving chess pieces from it – was to give my fellow Jews a rare chance to forget their pitiful circumstances for a while. That brief moment of solace that I managed to bring to my fellow sufferers filled me with such joy' (quoted in Yad Vashem Artifacts Collection, 'Chess pieces carved by Elhanan Ejbuszyc in Auschwitz from his block leader's club').

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Panel 4: Pictured is *EVE Online* (2003), an epic, massively-multiplayer universe of possibility, where players can find work as anything from a corpse collector to a CEO. It's a world so complex it needs to be run by a council, chosen in a real-world election, who meet every year with a real-world economist to help inform the game's development. Freed from the laws and conventions that underpin everyday life and even most other games, the players of *EVE* have turned it into a lawless galaxy of corporations and pirates, rife with theft, kidnap and extortion. Some scams take on the quality of legend. In 2017, the enormous corporation Circle of Two was brought to its knees when a high-ranking member turned on the leadership, stealing all their assets, including a Death Star-style superweapon worth tens of thousands of real-world dollars.

But online interaction doesn't need to be malicious. In 2005, an accidental programming glitch in *World of Warcraft* led to the outbreak of a virtual plague. A newly uploaded boss fight left players who had encountered him infected with deadly 'corrupted blood', which quickly spread between players across the virtual world. The fascinating part of this was players' re-actions. While many quit out of frustration, many others stayed to fight the spread of the disease, warning other players away from the outbreak or helping to heal the sick; see Eric T. Lofgren and Nina H. Fefferman, 'The untapped potential of virtual game worlds to shed light on real world epidemics'.

World of Warcraft isn't the first game to be beset by a virtual virus. In 2000, Will Wright unleashed a guinea pig-borne disease into his game *The Sims*. If players didn't keep their pet clean the virus would spread between characters, and if players neglected to let those sick Sims rest, they would eventually die. A secret piece of code, the virus caused panic amongst *The Sims* community. Many were upset that their precious Sims were being killed, while others relished the unexpected twist in the tale; see John Markoff, 'Something is killing the Sims, and it's no accident'.

Panel 5: See Maxwell Neely-Cohen, 'War without tears'.

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Panel 3: Quote from the cover of *Newsweek* (5 May 1997).

PAGE 160
Panel 2: See B. Jack Copeland (ed.), *The Essential Turing*, p. 565.

Panel 6: See Andrew Marr, *A History of the World*, p. 554.

Panel 7: See Klint Finley, 'Did a computer bug help Deep Blue beat Kasparov?'. For a description of the Turing Test, see the endnotes for page 22 of this book. Essentially, to pass the Turing Test, a machine must convince a human that they are com-municating with another human.

PAGE 161
Panel 1: Quote from Luke Harding and Leonard Barden, 'Deep Blue win a giant step for computerkind'.

Panels 3–4: See Adam Gabbatt, 'IBM computer Watson wins Jeopardy clash' and James Vincent, 'DeepMind's Go-playing AI doesn't need human help to beat us anymore'.

Panel 5: Quote from Noam Chomsky, *Language and Thought*, p. 93, written before Deep Blue's 1997 win but during a time when Kasparov was engaging with computer chess, including his defeat of chess computer Deep Thought in 1989.

PAGE 162
Panel 2: Quote from Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture*, p. 5.

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