WHY MAKE GAMES?

GAMEFOUNDERS - KUALA LUMPUR

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- SO, YOU SHOULD NOW BE **WELL** ON YOUR WAY TO CREATING YOUR **MASTERPIECE** HERE AT GAMEFOUNDERS

- I PROBABLY **CAN'T** GIVE YOU MUCH **DESIGN** ADVICE OF **PRACTICAL** USE AT THIS STAGE
  - YOU WOULDN'T BE ABLE TO **ACT** ON IT EVEN IF YOU **DIDN'T** KNOW IT ALREADY

- I THOUGHT THAT **INSTEAD** I'D TALK ABOUT SOMETHING WITH **LONG-TERM** VALUE
  - SOMETHING A LITTLE MORE **CHEERFUL**

- **YOU** ARE GOING TO **DIE**
- **KNOWING** THIS, WHY DO YOU WANT TO SPEND YOUR **ENTIRE** ADULT LIFE MAKING **GAMES**?
- WHY NOT WRITE **NOVELS**? DRIVE **TRUCKS**? AUTHENTICATE **NUCLEAR** POWER STATION SOFTWARE? PRACTISE **LAW**? FEED THE **POOR**?
- YOU **COULD** DO — OR TRY TO DO — ANY OF THESE THINGS
- **WHY** MAKE GAMES?

- QUILT

TAPESTRY

- SOME **POSSIBLE** ANSWERS:
  - FOR THE **MONEY** (HA HA HA!)
  - TO WORK IN A WONDERFUL, **CREATIVE** INDUSTRY
  - PURELY BY **ACCIDENT**
  - YOU WANT A NEW **CHALLENGE**
  - YOU GET TO **CREATE** WHAT YOU LIKE TO **PLAY**
  - YOU'RE ONLY OBEYING ORDERS
  - IT'S PART OF YOUR GRAND SCHEME FOR **WORLD DOMINATION**
  - MAKING GAMES IS **FUN**!

- I'VE HEARD **ALL** OF THESE ANSWERS OVER THE YEARS

- NEVERTHELESS, MOST **DESIGNERS** WILL REPLY THAT THEY FIND DESIGNING GAMES **FUN**

- MOST **NON-DESIGNERS** WILL REPLY THAT THEY WANT TO WORK IN A WONDERFUL, **CREATIVE** INDUSTRY

- IT'S EASY TO SEE WHY THIS WORKS FOR **DESIGNERS**, BUT WHAT ABOUT **THE NON-DESIGNER** ANSWER?

- IF YOU'RE A **PROGRAMMER**, THE FUN IS IN THE **PROGRAMMING**

- YOU'LL **HAPPILY** PROGRAM SOFTWARE YOU WON'T USE

- SO WHY PROGRAM **GAMES** WHEN YOU COULD PROGRAM **WASHING MACHINES** FOR **150%** OF A GAME PROGRAMMER'S SALARY?

- IT'S BECAUSE, ALMOST **UNIQUELY**, GAMES ALLOW YOU TO DO **CREATIVE** PROGRAMMING
  - TAPESTRIES RATHER THAN QUILTS

- **PLAYERS** MAKE GAMES BECAUSE THEY WANT TO EXPERIENCE THE **END** RESULT

- DEVELOPERS ARE INTERESTED IN **CREATING** THAT WHICH CAN BE **EXPERIENCED**

- DEVELOPERS DON'T WANT TO MAKE GAMES THAT **THEY** WANT TO PLAY, THEY WANT TO MAKE GAMES THAT **PEOPLE** WANT TO PLAY
  - ALTHOUGH THEY **MAY** WANT TO PLAY IT SO THEY CAN SEE THEIR **HANDIWORK**
    - OR **NOT**, IF YOU MAINLY PROGRAM **TOOLS**...

- WHEN I **INTERVIEW** PROSPECTIVE GAMES STUDENTS, I ALWAYS ASK THIS QUESTION:
  - "WHY DO YOU **WANT** TO BE A GAME DEVELOPER?"
- 90% OF THEM WILL **BEGIN** THEIR REPLY LIKE THIS:
  - "EVER SINCE I WAS A **SMALL CHILD** I'VE **LOVED** PLAYING GAMES"
- THIS IS LIKE SAYING YOU WANT TO BE AN **ARCHITECT** OR **BRICKLAYER** BECAUSE YOU ENJOY LIVING IN **HOUSES**

- **DEVELOPING** GAMES IS NOT THE SAME AS **PLAYING** THEM

- DEVELOPERS DON'T MAKE GAMES TO **PLAY** THEM, THEY MAKE THEM TO **MAKE** THEM

- SO **WHY**, THEN? WHY DO THEY WANT TO **MAKE GAMES**?

- THE ANSWER IS THAT THEY WANT TO **SAY** SOMETHING

  – SOMETHING THEY CAN'T SAY **EXCEPT** THROUGH GAMES

- PEOPLE WHO WORK ON GAMES ARE ALL **ARTISTS** IN THEIR OWN FIELDS

- THEY WANT TO **SAY** SOMETHING THROUGH THE PARTICULAR **MEDIUM** THEY HAVE CHOSEN

- AS FOR **WHAT** THEY WANT TO SAY, WELL THEY DON'T FULLY **KNOW**!

- IF THEY **DID** KNOW, THEY COULD JUST SAY IT IN **WORDS** INSTEAD OF IN PROGRAMS, VOICE ACTING, ANIMATIONS, IMAGES, MUSIC, ...

  – EVEN **QA** HAS AN ARTISTIC SIDE TO IT

"THE" ARTIST

- THE ARTIST FOR THE GAME AS A **WHOLE** IS THE **LEAD DESIGNER**

- THIS IS BECAUSE OF WHERE THE ARTISTIC **PAYLOAD** OF GAMES LIES:
  - IN THE **GAMEPLAY**

- **OTHER** MEDIA CAN ALSO CARRY AN ARTISTIC PAYLOAD IN NARRATIVE, IMAGERY, SOUND, …

- ONLY **GAMES** HAVE **GAMEPLAY**

- THE LEAD DESIGNER **DETERMINES** THE GAMEPLAY, SO IS "THE" ARTIST FOR THE GAME

DIRECTORS

- THIS IS LIKE IN FILM, WHERE THE **DIRECTOR** DETERMINES WHAT THE **VIEWER** SEES

- THE **LEAD DESIGNER** DETERMINES WHAT THE **PLAYER** PLAYS

- JUST AS **MOVIES** HAVE SCREENWRITERS, ACTORS, COSTUME DESIGNERS, MAKE-UP ARTISTS, CINEMATOGRAPHERS, ...

- SO **GAMES** HAVE CREATIVES IN ALL AREAS

- GAMES LET YOU **SAY THINGS** YOU CAN'T SAY **ANYWHERE** ELSE

- WHAT DO I MEAN BY "**SAY**" HERE?
- WELL, YOU'RE TRYING TO **ARTICULATE** SOMETHING **IMPORTANT** TO YOU
  - ABOUT YOU, THE WORLD, YOUR ART, ...
- YOU MAY BE SAYING IT TO AN AUDIENCE OF **MANY** – THE **PLAYERS**
- OR TO AN AUDIENCE OF **ONE** – **YOURSELF**
- YOU WON'T KNOW WHAT IT **IS** UNTIL YOU **SAY** IT, THOUGH
  - AND EVEN **THEN** YOU MAY NOT UNDERSTAND IT

- RATHER THAN SPEAK IN **VAGUE** TERMS, HOW ABOUT I GIVE AN **EXAMPLE**?

- THIS WILL BE A **DESIGN**-FOCUSED EXAMPLE, AS I'M A **DESIGNER**

- I'M **HOPING** THE NON-DESIGNERS WILL BE ABLE TO **MAP ONTO** IT

- REMEMBER: YOU'RE **ARTISTS**, NOT MERE **TECHNICIANS**
  - WHETHER YOU **LIKE** IT OR NOT
  - BECAUSE IF **NOT**, WHY ARE YOU EVEN **HERE**?

- THE SECRET WORLD, FUNCOM, 2012

- WHEN I **QUIT** IN MAY 2015 I WAS **50TH** IN ITS HIGH SCORE LIST (OUT OF ~50,000)

- STAR WARS: THE OLD REPUBLIC, BIOWARE, 2011

- THE MOST **EXPENSIVE** GAME YET MADE
  - I PLAYED 6H/DAY FOR **137 DAYS** IN 2012

- WORLD OF WARCRAFT, BLIZZARD, 2004

- I ACCRUED **225 DAYS** OF /PLAYED FOR THIS
  - I LEFT WHEN **PANDAS** BECAME PLAYABLE

- EVERQUEST, SONY ONLINE ENTERTAINMENT, 1999

- I NEVER PLAYED EVERQUEST...

• DIKUMUD, COPENHAGEN UNIVERSITY, 1990

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[x2] A barrel has been left here.
An angry-looking statue of Hoturi is standing here.
An angry-looking statue of Priapus is standing here.
A statue of Odin is standing behind the altar.
A Sign for Newbies is here.
You are a guest here until you save yourself.

If you need
to get to your guild, use the guild medallion in your inventory. If you lose
it, pray to the statue of Odin for another.


105m/202e/38hlook
Temple of Udgaard
    You are inside the small and humble village temple in Udgaard.  A simple
stone altar, with strange stone carvings, is placed against the north wall.  A
small humble donation room is to the east.  The temple exit is south to the
Village Square.
[x2] A barrel has been left here.
An angry-looking statue of Hoturi is standing here.
An angry-looking statue of Priapus is standing here.
A statue of Odin is standing behind the altar.
A Sign for Newbies is here.

105m/202e/38h
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ABERMUD, ALAN COX, 1987

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Your wimpy value is set to 15. See 'help change' to see what that means.

The Temple Of Paradise
    You stand in the Temple of Paradise, a huge sandstone structure whose
walls are decorated with ancient carvings and runes, some so old that even
the priests no longer know their meanings.
    A single set of steps lead south, descending the huge mound upon which the
temple is built and ending in the forests below.
A roaring fire burns here.  Its flames make the temple sparkle and glitter.
    At your feet a huge sacrificial pit allows you to give valuables to the gods
in the hope of being rewarded.
A furled umbrella lies here.

Obvious exits are:
North : Welcome Center
South : Forest Track
 Down : Forest Track

Last login: Wed Sep  7 17:43:26 2005


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- MULTI-USER DUNGEON, ROY TRUBSHAW & RICHARD BARTLE, 1978

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Narrow road between lands.
You are stood on a narrow road between The Land and whence you came.
To the north and south are the small foothills of a pair of majestic
mountains, with a large wall running round. To the west the road
continues, where in the distance you can see a thatched cottage
opposite an ancient cemetery. The way out is to the east, where a
shroud of mist covers the secret pass by which you entered The
Land. It is raining.
*w
Narrow road.
You are on a narrow east-west road with a forest to the north and
Gorse scrub to the south. It is raining. A splendid necklace lies
on the ground.
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- MUD WASN'T BASED ON **ANYTHING**

    – WHICH IS WHY **I'M** TALKING AND YOU'RE **NOT**…

- THAT **ISN'T** TO SAY THAT IN 35 YEARS YOU WON'T BE GIVING A TALK **SIMILAR** TO THIS ONE, BUT FOR YOUR **OWN** AREA OF EXPERTISE

- THE **BEST** THING ABOUT MAKING GAMES IS THAT **WHATEVER** YOU'RE DOING, YOU'RE THE **FIRST** PERSON TO DO IT

  – YOU ARE BY **DEFINITION** A **PIONEER**

- ALL **YOU** HAVE TO DO IN ORDER TO BE UP HERE IN 2051 IS **NOT DIE**

- (TELL THEM YOUR DIJKSTRA ANECDOTE?)

- THERE'S ACTUALLY SOMETHING **ELSE** YOU NEED TO DO TO GIVE TALKS LIKE THIS WHEN YOU'RE **OLD** AND **GREY**

- YOU NEED TO **ENJOY** YOUR WORK

- FOR SOME PEOPLE, DEVELOPING GAMES IS SIMPLY A **MEANS TO AN END**

- THEY MERELY WANT TO APPEAR **COOLER** THAN BRAIN SURGEONS AND ROCKET SCIENTISTS

- THIS IS **NO** BASIS ON WHICH TO BUILD A **LIFE** IN GAME DEVELOPMENT

- IF YOU **DO** ENJOY YOUR WORK, THOUGH, YOU'LL KEEP AT IT BECAUSE IT'S **FUN**

- NON-PROGRAMMERS FIND IT **ASTONISHING** THAT PROGRAMMERS **LIKE** PROGRAMMING
  - "THEY DO IT IN THEIR **SPARE TIME**?!"

- LOGICALLY, IF YOU **ARE** GOING TO SPEND THE **REST OF YOUR LIFE** THINKING ABOUT SOMETHING, YOU'D **BETTER** FIND IT FUN OR YOU'RE **STUFFED**

- FUN ALONE STILL ISN'T **ENOUGH**, THOUGH

- TO DO SOMETHING **ONLY** BECAUSE YOU LIKE IT IS MERE **HEDONISM**

- THERE'S NO PRESSURE TO **PUSH** AT THE **BOUNDARIES** IF YOU'RE HAPPY WITH THEM WHERE THEY ARE

- THERE'S **SLIGHTLY** MORE IF "PUSHING AT BOUNDARIES" IS **WHAT** YOU FIND FUN, BUT YOU STILL LACK **DIRECTION**

- IF YOU **REALLY** WANT TO EXCEL IN WHAT YOU DO, YOU NEED TO **BELIEVE** IN IT

- MY DAD WAS A **GAMER**, MY MUM WAS A **STORYTELLER**
- MY DAD WAS A **GAS FITTER**, MY MUM WAS A **SCHOOL MEALS COOK**
- WE **EXISTED** IN **SOCIAL HOUSING**
- WE **LIVED** IN OUR IMAGINATIONS!
- IN MY FORMATIVE YEARS, I SAW **MISERY** AND **INJUSTICE** IN THE WORLD AROUND ME
  - I WANTED TO MAKE A **BETTER** WORLD
- **SO I DID**

- HERE'S A PICTURE OF TWO **BEAR CUBS** FIGHTING

- RAWR!

- VIRTUAL WORLDS WERE **INDEPENDENTLY** INVENTED ON AT LEAST **5** OTHER OCCASIONS
  - SCEPTRE OF GOTH (ORIGINALLY E*M*P*I*R*E)
    - ALAN KLIETZ, 1978
  - AVATAR
    - BRUCE MAGGS, ANDREW SHAPIRA & DAVID SIDES, 1979
  - ISLAND OF KESMAI
    - KELTON FLINN & JOHN TAYLOR, 1981
  - HABITAT
    - RANDY FARMER & CHIP MORNINGSTAR, 1985
  - MONSTER
    - RICH SKRENTA, 1989

- THIS BEING THE CASE, WHY IS IT THAT ALMOST **ALL** TODAY'S MMOS DESCEND FROM *MUD?*

- YOU DON'T HAVE TO BE A **GENIUS** TO COME UP WITH THE IDEA OF A COMPUTER-MODERATED SHARED PERSISTENT ENVIRONMENT YOU INTERACT WITH USING A SINGLE CHARACTER

- YOU **DO** NEED TO HAVE A **REASON** TO DO SO

- **MY** REASON WAS TO GIVE PEOPLE A **PLACE** THEY COULD GO TO **BE** AND **BECOME** **THEMSELVES**

- MOST OF THE **OTHER** PEOPLE WHO INVENTED VIRTUAL WORLDS WANTED TO **PLAY** THEM
  - CHIP AND RANDY WERE THE EXCEPTIONS
- **I** WANTED **OTHER PEOPLE** TO PLAY *MUD*
- I SAW VIRTUAL WORLDS AS A WAY TO MAKE THE **REAL** WORLD A **BETTER** PLACE
- I THEREFORE **GAVE AWAY** THE CODE TO ANYONE WHO WANTED IT AND MADE IT **FREE**
- THE OTHERS EITHER **GUARDED** THEIR CODE OR IT WAS **NON-TRANSPORTABLE** ANYWAY

- AS IT WAS **FREE**, MANY PEOPLE PLAYED *MUD*

- SOME WROTE THEIR **OWN** VIRTUAL WORLDS BASED ON IT

  - *ABERMUD*, FOR EXAMPLE

- THESE IN TURN INSPIRED **OTHERS**

  - *DIKUMUD*, FOR EXAMPLE

- EVENTUALLY THERE WERE **THOUSANDS** OF MUDS ON THE NASCENT INTERNET

  - IN 1994, THEY ACCOUNTED FOR **10%** OF ALL INTERNET TRAFFIC

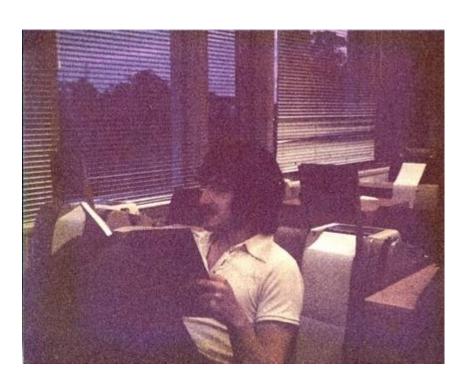- BECAUSE OF THIS, THERE WERE **HUNDREDS** OF PEOPLE WHO COULD **CODE** MUDS FOR EVERY **ONE** WHO WORKED ON ANY OF THE OTHERS

- THUS, WHEN **PROFESSIONAL** VIDEOGAME DEVELOPERS MOVED IN, THEY GOT ALMOST **ALL** THEIR DESIGNERS AND CODERS FROM **MUDS**

- IF ROY AND I HADN'T BEEN SO **OUTRAGED** WITH WORKING CLASS LIFE IN 1970S BRITAIN, THIS **WOULDN'T** HAVE HAPPENED

  – THEY'D HAVE COME FROM *10K* OR *SOG* INSTEAD

- IF **YOU** FEEL YOUR WORK LETS YOU **SAY** SOMETHING OR **HELP** SOMEONE OR **BUILD** **BRIDGES** OR WHATEVER, **YOU** ARE IN A GOOD PLACE

- FULL-TIME GAME DEVELOPERS NEED **IDEALISM** TO **DIRECT** THEM THROUGH THEIR **ART**

- OF COURSE, WHEN YOU REACH **MY** AGE THEN **CYNICISM** AND **DESPAIR** HAVE TAKEN OVER

  - THESE **ALSO** WORK AS DRIVERS, THOUGH!

- A STUDENT ONCE ASKED ME WHY WE WROTE MUD USING **TEXT** RATHER THAN **GRAPHICS**

- **THIS** IS WHY:

- THOSE MACHINES BEHIND ROY ARE **TELETYPES**

- WHAT YOU THINK OF AS HIGH-TECH **NOW** WILL SOON BE **SUPERSEDED** AND **OBSOLETE**

- WHAT YOU'RE DOING **NOW** WILL HAVE CHANGED BEYOND RECOGNITION IN TWO **DECADES**

- IT WILL **DO** SO BECAUSE **ALL** TECHNOLOGICAL FIELDS ARE STILL **ADVANCING**

  - MY FRIENDS THOUGHT I WAS **WEIRD** FOR TAKING SNAPS OF THEM IN 1978

- CONSIDER WHAT ROY AND I **NEEDED** TO KNOW WHEN WE WROTE *MUD*

WHAT YOU NEED TO KNOW TO MAKE A VIRTUAL WORLD (THEN)

- **MEMORY** IS MADE OF SOFT-IRON TOROIDAL **CORES** SUSPENDED ACROSS A GRID OF **WIRES**, WITH A DIAGONAL **SENSE/INHIBIT** WIRE TO READ/WRITE THEM.

- **CIRCUITS** ARE MADE OF WIRES AND **GATES**. AN **AND** GATE IS LIKE TWO SWITCHES IN SERIES; AN **OR** GATE IS LIKE TWO SWITCHES IN PARALLEL. BY COMBINING AND GATES AND (RATHER TRICKIER) **NOT** GATES, YOU CAN MAKE **NAND** GATES, FROM WHICH YOU CAN CONSTRUCT ANY LOGIC CIRCUIT. ONE SUCH CIRCUIT IS A **FLIP-FLOP**, WHICH HAS **TWO** STABLE STATES AND SO WORKS AS ANOTHER (MORE POWER-HUNGRY) FORM OF **MEMORY**. YOU CAN CONNECT FLIP-FLOPS IN A CHAIN TO MAKE A **REGISTER**. BY PASSING THE INPUTS TO THESE FLIP-FLOPS THROUGH A SET OF GATES, YOU CAN EFFECT **OPERATIONS** – SHIFTING A REGISTER'S BIT SETTINGS ALL TO THE LEFT, FOR EXAMPLE (WHICH IS THE SAME AS MULTIPLYING THE NUMBER THE REGISTER REPRESENTS BY 2). ANOTHER ARRANGEMENT OF GATES MAKES A CIRCUIT CALLED A **HALF-ADDER**; COMBINING MULTIPLE HALF-ADDERS WILL ALLOW YOU TO ADD THE CONTENTS OF TWO REGISTERS TOGETHER.

- IN ORDER TO DECIDE WHICH OPERATION TO PERFORM ON A REGISTER, YOU HAVE A SPECIAL **INSTRUCTION REGISTER**. BY USING GATES TO DETECT **COMBINATIONS** OF BITS IN THE INSTRUCTION REGISTER, THE OPERATION IT IDENTIFIES CAN BE DETERMINED. INSTRUCTIONS ARE STORED IN MEMORY, AND THE **ADDRESS** OF THE NEXT INSTRUCTION TO FETCH IS KEPT IN A REGISTER CALLED A **PROGRAM COUNTER**. HAVING **FETCHED** AN INSTRUCTION, IT IS **EXECUTED**, AND THEN THE PROGRAM COUNTER IS **INCREMENTED** SO THE NEXT OPERATION CAN BE FETCHED. OPERATIONS ON THE PROGRAM COUNTER, SUCH AS ADDITION, IMPLEMENT CONCEPTS SUCH AS **JUMPS**.

- A SET OF PANEL **SWITCHES** LOAD INITIAL VALUES INTO REGISTERS. THIS IS TEDIOUS, SO JUST ENOUGH ARE LOADED THAT FURTHER INSTRUCTIONS CAN BE READ FROM **PAPER TAPE**. THESE ALLOW MANY MORE INSTRUCTIONS TO BE LOADED INTO MEMORY FROM A **MAGNETIC TAPE**. THE PROGRAM SO LOADED IS THE **OPERATING SYSTEM**, WHICH WILL ADMINISTER THE COMPUTER (FOR EXAMPLE, MANAGE THE **DEVICES** THAT APPLICATION PROGRAMS RUN).

- USER PROGRAMS ARE KEPT ON **DISC PACKS**, **CARDS**, **PAPER** AND **MAGNETIC TAPE**. TO WRITE A PROGRAM, YOU USE A **PROGRAMMING LANGUAGE**. THE FIRST PROGRAMS ARE ENTERED USING THE PANEL SWITCHES; THEY ULTIMATELY CREATE A PROGRAM CALLED AN **ASSEMBLER**, WHICH CONVERTS HUMAN-READABLE ASSEMBLY LANGUAGE INTO THE **BINARY** THAT THE COMPUTER ACTUALLY EXECUTES. ASSEMBLY LANGUAGE IS USED TO WRITE THE MAKINGS OF A **COMPILER** FOR A **HIGH-LEVEL LANGUAGE**. COMPILERS TAKE HIGH-LEVEL LANGUAGES AND DROP EITHER ASSEMBLER OR DIRECT BINARY. JUST **ENOUGH** OF THE COMPILER IS WRITTEN IN ASSEMBLER THAT THE REST OF IT CAN BE WRITTEN IN THE LANGUAGE **ITSELF**, A PIECE AT A TIME ACROSS MULTIPLE ITERATIONS.

- HIGH-LEVEL LANGUAGES CAN BE USED TO WRITE **GENERAL-PURPOSE** PROGRAMS. ALMOST EVERY PROGRAM IS SOME COMBINATION OF THE ACTIVITIES PERFORMED BY A COMPILER, A **DATABASE** AND/OR AN OPERATING SYSTEM. YOU NEED TO BE **FLUENT** IN A HIGH-LEVEL LANGUAGE BEFORE YOU CAN PROGRAM MUCH IN IT, BUT THEY'RE ALL BASICALLY THE **SAME** WHEN IT COMES DOWN TO IT. CHOICE OF LANGUAGE IS A BALANCE BETWEEN SPEED OF **EXECUTION**, SPEED OF **WRITING** AND SPEED OF **MAINTENANCE**.

- TO CREATE A **VIRTUAL WORLD**, YOU NEED TO DESIGN YOUR OWN **DATA DEFINITION LANGUAGE** TO SPECIFY THE VIRTUAL WORLD. YOU WRITE YOUR **OWN** COMPILER TO CONVERT IT INTO ASSEMBLY LANGUAGE PLUS SOME INTERMEDIATE CODE THAT YOU CAN **INTERPRET** (THAT IS, EXECUTE IN SOFTWARE RATHER THAN IN HARDWARE). YOU STORE **DETAILS** ABOUT THE PLAYERS AND THE WORLD ITSELF IN A **DATABASE**, WHICH YOU **ALSO** WRITE YOURSELF. WHEN THE VIRTUAL WORLD **RUNS**, IT ACTS LIKE AN OPERATING SYSTEM – CONTINUALLY **PROCESSING** UNTIL IT IS STOPPED OR DECIDES TO STOP.

- IF, WHEN YOU CREATE YOUR VIRTUAL WORLD, YOU **DON'T** KNOW THE WHOLE STORY FROM MEMORY CORES (OR THEIR TRANSISTOR EQUIVALENT) RIGHT THE WAY UP TO WRITE-YOUR-OWN-COMPILER, YOU **WON'T** BE ABLE TO TWEAK EVERY **BIT**, STRETCH EVERY **INSTRUCTION**, PACK EVERY **DATA STRUCTURE** OR TAKE EVERY **SHORTCUT**; LESS OF YOUR WORLD WILL FIT IN THE (IN *MUD*'S CASE) **70K OF MEMORY YOU GET** IN EVENINGS AND WEEKENDS ON THE TIMESHARING SYSTEM. YOU NEED TO KNOW **ALL** THIS IF YOU'RE GOING TO DO IT.

- OH, YOU **ALSO** NEED THAT LITTLE BIT AT THE END WHERE YOU DESIGN THE GAME WORLD ITSELF.

WHAT YOU NEED TO KNOW TO MAKE A VIRTUAL WORLD (NOW)

- HOW TO RAISE $25,000,000.
- ON THE TECHNICAL SIDE, YOU NEED TO DECIDE WHICH **KITS**, **TOOLS**, **LIBRARIES** AND **MIDDLEWARE** YOU'RE GOING TO BUY IN TO GET THE FOLLOWING FUNCTIONALITY:

  - 3D/**GRAPHICS ENGINE**/RENDERER
  - **AI** ENGINE
  - **ANIMATION** PACKAGE
  - **ART** PACKAGE
  - **ASSET MANAGEMENT** SOFTWARE
  - **AUDIO** PACKAGE
  - BACK-END **BILLING** SYSTEM
  - COMMUNITY **MANAGEMENT** TOOLS
  - COMPILER/**DEVELOPMENT ENVIRONMENT**
  - **DATABASE**
  - **LOAD-BALANCING** SYSTEM
  - **NETWORK** LIBRARY
  - **OBJECT** MODELLING/SPECIFICATION SYSTEM
  - **PATCHING** SOFTWARE
  - **PHYSICS** ENGINE
  - **PROJECT DEVELOPMENT** TOOLS
  - **SECURITY** SYSTEM
  - **TREE-CREATION** TOOLS
  - **WEB-CREATION** TOOLS

- HAVING **BOUGHT** THEM IN, YOU AND YOUR **TEAM** OF PROGRAMMERS NEED TO KNOW HOW TO **SEW** THE EXECUTABLE ONES TOGETHER WITH YOUR **OWN** PROGRAM CODE, THEN HOW TO CODE THE GAME **MECHANICS** ON TOP OF THAT, PLUS ALL THE **PROJECT-SPECIFIC** TOOLS YOU REQUIRE, WHILE YOUR **VAST ARMY OF ARTISTS** ARE CREATING THE GRAPHICS YOU'VE SPECIFIED.
- TO DO THIS, YOU HAVE TO HAVE KNOWLEDGE OF EVERY **API** (APPLICATION PROGRAMMING INTERFACE) FOR **EVERY** KIT, TOOL, LIBRARY AND MIDDLEWARE YOU'RE USING.
- IF, WHEN YOU CREATE YOUR VIRTUAL WORLD, YOU **DON'T** KNOW THE WHOLE STORY FROM AUDIO PACKAGE RIGHT THE WAY UP TO WRITE-YOUR-OWN-PLANET-CREATION-TOOLS, YOU **WON'T** BE ABLE TO TWEAK EVERY **OBJECT**, STRETCH EVERY **SCRIPT**, PACK EVERY **DATA STRUCTURE** OR TAKE EVERY **SHORTCUT**; LESS OF YOUR WORLD WILL APPEAR IN THE **3-YEAR WINDOW** YOU GET FOR ITS CONSTRUCTION. YOU NEED TO KNOW **ALL** THIS IF YOU'RE GOING TO DO IT.

- OH, YOU **ALSO** NEED THAT LITTLE BIT AT THE END WHERE YOU DESIGN THE GAME WORLD ITSELF.

WHAT YOU NEED TO KNOW TO MAKE A VIRTUAL WORLD (TOMORROW)

- THAT LITTLE BIT AT THE END WHERE YOU DESIGN THE GAME WORLD ITSELF.

- WHAT WE **NEEDED** TO KNOW IN 1978 IS NOW **ARCANE**

- IN **TECHNICAL** TERMS, **NO** MMO DEVELOPER NEEDS TO KNOW **ANY** OF THIS TODAY

- HOWEVER, SOMEONE *NEEDS TO HAVE KNOWN IT*

- SOMEONE ALWAYS **WAS** GOING TO KNOW IT, BUT ROY AND I WERE **DRIVEN** TO KNOW IT **FIRST**

  – EVEN THOUGH WE DIDN'T **KNOW** WE WERE FIRST!

- SO IT IS WITH WHAT **YOU'RE** DOING **NOW**
- GREAT **SWATHES** OF IT WILL BE COMPLETELY **IRRELEVANT** IN 35 YEARS' TIME
- HOWEVER, SOMEONE – YOU! – **WILL** *NEED TO HAVE DONE IT*
  - WILL NEED TO HAVE BEEN **PASSIONATE** ENOUGH TO DO IT
- SOMEONE - **YOU**? - WILL HAVE INFLUENCED THE FUTURE
- THIS GIVES YOU **POWER** TODAY!

- PLAYING GAMES IS AMONG THE MOST **IMPORTANT** THINGS HUMAN BEINGS **DO**

- FAR FROM BEING SOME **NEW** CULTURAL **FAD**, GAMES **PREDATE** CULTURE

- **ANIMALS** PLAY GAMES

  - I DON'T SEE THEM WRITING **POETRY** OR NOVELS

- EAT **THAT**, LITERATURE!

- IF YOUR GAME DOESN'T SELL, MAKE **ANOTHER**

- THIS TIME, TRY TO **SAY** SOMETHING, NOT TO **SELL** SOMETHING

- IT'S ONLY WITH THE ADVENT OF COMPUTERS THAT THE **SIGNIFICANCE** OF GAMES HAS GRADUALLY BECOME **RECOGNISED**

- THIS MEANS THERE IS A TRULY **VAST**, UNEXPLORED TERRITORY OUT THERE

- YOU PEOPLE ARE THE **PIONEERS**! **YOU** GET TO OPEN IT UP! **YOU** GET TO BE FIRST TO SEE ITS **WONDERS**!

- AND IF YOU HAVE SOMETHING TO **SAY**, YOU GET TO **CHANGE** WHAT YOU SEE, TOO!

- NOW IS A **MARVELLOUS** TIME TO BE MAKING COMPUTER GAMES — FOR **WHATEVER** REASON

- THE OLD WALLS ARE CRUMBLING, AND THE **GLORIOUS** VISTAS THEY HID ARE WAITING TO BE REVEALED
  - **YOU** GET TO REVEAL THEM
  - **YOU** GET TO BE FIRST TO **UNDERSTAND** THEM
  - **YOU** GET THEORIES **NAMED** AFTER YOU

- MOST **IMPORTANT** OF ALL, YOU GET TO MAKE THE **BETTER GAMES** THAT RESULT!

- **HUNDREDS** OF **THOUSANDS** OF PEOPLE ARE MAKING GAMES

- **MOST** SUCH PEOPLE DON'T KNOW **WHY** THEY'RE MAKING THEM

- THEY HAVE NOTHING OF INTEREST TO **SAY**, SO NOTHING OF INTEREST IS **HEARD**

- YOU MAY BE A LOWLY **TECH GEEK**, BUT IF YOU **BELIEVE** IN WHAT YOU DO, YOU **CAN** CHANGE THE WORLD

- I **KNOW**, BECAUSE I DID IT **MYSELF**