Human Assembly Instructions

Rumi

"Stop acting so small. You are the universe in ecstatic motion."

1. How to Make a Human

An Instruction Manual Written by the Universe

Estimated build time: ~13.8 billion years
Difficulty level: Extreme
Warranty: None
Returns accepted: No

Step 1: Manufacture the Raw Materials

Begin by creating a universe large enough to sustain stars, gravity, and time. This step cannot be rushed.

Once the universe has cooled sufficiently, assemble massive stars—much larger than the ones you plan to keep. These oversized stars are not meant to last. Their sole purpose is to burn violently, fuse simple elements into heavier ones, and then die.

When the star exhausts its fuel, allow gravity to collapse it. Trigger a supernova. This explosion is essential. It produces and disperses carbon, oxygen, nitrogen, phosphorus, iron, calcium, and dozens of trace elements that will later be required for blood, bone, thought, and memory.

Do not skip this step.
Humans cannot be made from pristine hydrogen alone.

Step 2: Allow the Debris to Settle

Let the scattered elements drift for several million years. Patience is mandatory.

Eventually, gravity will gather this material into a cold molecular cloud. As pressure increases, ignite a new star at the centre and permit a rotating disk of dust, rock, and ice to form around it.

From this disk, assemble planets through repeated collisions. Expect chaos. Expect failure. Most planets will be unsuitable.

Select one planet and place it at a precise distance from the star—close enough for liquid water, far enough to avoid sterilisation. Provide it with an atmosphere thick enough to protect fragile chemistry but thin enough to allow light and energy to pass through.

Label this planet “temporary but sufficient.”

Step 3: Add Water Generously

Cover the planet with water. Use oceans.

Water is not optional. It is the medium that allows molecules to move, collide, fold, and react without tearing themselves apart. Without water, chemistry stalls. With it, chemistry begins to explore.

Add minerals to the water. Include clays, salts, iron, and phosphates. These surfaces will act as scaffolds, aligning molecules and encouraging complex structures to form.

At this stage, the ingredients will look unimpressive. This is normal.

Step 4: Wait for Matter to Learn How to Remember

Allow chemistry to run uninterrupted for several hundred million years.

Eventually, some molecular arrangements will begin copying themselves. This is the critical transition. Once matter can remember its own structure, even imperfectly, the process becomes self-correcting.

Replication introduces variation. Variation invites selection. Selection rewards patterns that persist.

Do not intervene. Failure is required. Extinction is expected. Most attempts will collapse back into simplicity. A few will not.

This is called life.

Step 5: Scale Up Through Iteration

Over billions of years, permit life to experiment.

Single cells will become colonies. Colonies will specialise. Specialisation will lead to tissues, organs, and coordinated systems.

At several points, nearly destroy everything. This helps reset the search space.

Eventually, some organisms will develop nervous systems—structures capable of rapid internal communication. Encourage sensory input. Light, pressure, and chemistry should all be detectable.

Given enough time, nervous systems will centralise. Brains will form.

Step 6: Assemble a Brain (Handle with Care)

Construct a brain primarily from water, fats, proteins, and salts. Do not be alarmed by the simplicity of the materials.

Arrange approximately 86 billion neurons into a densely interconnected network. Link them with trillions of adjustable connections. Ensure that each experience slightly alters the structure itself.

The brain must be plastic.
It must rewrite itself continuously.
It must never fully stabilise.

When functioning correctly, this structure will generate thoughts, emotions, memories, imagination, and the unsettling ability to ask questions about its own existence.

This is the most delicate component in the entire build.

Step 7: Install Identity and Continuity

Ensure that change occurs in small, ordered increments.

Each tiny update—each chemical shift, electrical impulse, and structural adjustment—must accumulate gradually. Identity emerges not from permanence, but from continuity across change.

The human will experience this accumulation as time.

From the inside, it will feel like a flowing present.
From the outside, it will be a sequence of physical updates.

Both interpretations are acceptable.

Step 8: Enable Self-Awareness (Optional, But Interesting)

In rare cases, the assembled system will begin modelling itself.

It will recognise patterns not only in the environment, but in its own thoughts. It will form narratives, values, fears, hopes, and meanings.

At this point, the human may begin asking questions such as:

- *Where did I come from?*
- *Why is there something rather than nothing?*
- *What am I for?*

These questions are not errors.
They indicate successful installation.

2.How to Make a Human

Assembly Instructions (Single-Cell Edition)

Warning:
This manual describes the construction of *one* human cell.
A complete human requires approximately **37 trillion** of these units, assembled without a central blueprint.

Proceed carefully.

Step 1: Start with a Boundary That Is Not a Wall

Begin by creating a membrane.

This boundary must:

- Separate inside from outside
- Remain flexible
- Actively regulate traffic
- Repair itself continuously

Use a double layer of lipid molecules. They should arrange themselves spontaneously, tails inward, heads outward. This self-assembly is essential — manual placement is impossible.

Embed thousands of specialised proteins into this membrane. Some must act as gates. Others as pumps. Others as sensors capable of detecting single molecules drifting nearby.

The membrane must be selectively permeable, not merely porous.
It must *decide*.

Failure here results in immediate dissolution.

Step 2: Install an Internal Power Grid

Inside the membrane, construct multiple energy generators.

Each generator must:

- Import fuel
- Maintain electrical gradients
- Convert chemical energy into a universal cellular currency
- Avoid overheating

These structures, called mitochondria, are not optional. Each cell may require hundreds or thousands, depending on energy demand.

They operate continuously, producing energy at a molecular scale with efficiencies modern power stations cannot match.

Note:
These generators contain their own genetic instructions, inherited through a lineage billions of years old.

This is not redundancy.
It is historical layering.

Step 3: Build the Manufacturing Floor

Now install the protein factories.

Proteins are not generic components. Each one must be:

- Folded into a precise three-dimensional shape
- Chemically modified at specific locations
- Delivered to the correct destination

To accomplish this, assemble:

- Ribosomes (molecular-scale machines)
- An internal transport network
- Quality control systems that detect misfolded parts

Every second, tens of thousands of proteins will be manufactured, inspected, modified, shipped, and recycled.

None of this may stop.

Step 4: Add the Instruction Archive (Handle with Extreme Care)

Place the instruction set at the centre.

This archive must:

- Store approximately 3 billion base pairs of information
- Fit inside a space invisible to the naked eye
- Be accessible without being damaged
- Be copied with extraordinary fidelity

The DNA is not read linearly. It is looped, folded, and dynamically reconfigured. Different sections must be activated or silenced depending on context.

The same archive must produce:

- A neuron
- A skin cell
- A liver cell

The difference lies not in the instructions themselves, but in how they are interpreted.

This interpretive machinery must be assembled alongside the archive.

Step 5: Install Error Detection and Repair Systems

Mistakes are inevitable.

Radiation, chemical noise, and thermal motion will constantly damage internal components. To survive, the cell must detect errors faster than they accumulate.

Install:

- DNA repair enzymes
- Protein recycling systems
- Stress response pathways

Some repairs will fail.
The system must decide when damage is tolerable and when self-destruction is required.

Yes — include a self-destruct mechanism.

Cells that cannot maintain integrity must remove themselves for the sake of the larger system.

Step 6: Enable Communication

No cell operates alone.

Install receptors on the membrane capable of detecting:

- Hormones
- Neurotransmitters
- Immune signals
- Local chemical gradients

These signals must trigger internal cascades — chains of molecular events that amplify tiny external cues into decisive action.

A single molecule binding at the surface may cause:

- Gene activation
- Structural reconfiguration
- Movement
- Division
- Death

This sensitivity is not a flaw.
It is the entire point.

Step 7: Allow the Cell to Divide (With Precision)

Replication is mandatory.

Before division, the cell must:

- Duplicate its entire instruction archive
- Verify the copy
- Double its internal machinery
- Partition components accurately

Errors here propagate.

The division process must be timed, regulated, and conditional. Division at the wrong moment leads to catastrophic outcomes.

Despite this, division must occur trillions of times across a human lifetime.

Step 8: Synchronise with the Larger Organism

Once assembled, the cell must:

- Accept signals from the body
- Adjust its behaviour accordingly
- Suppress its own interests when necessary

No cell is sovereign.

The human body is not a hierarchy but a negotiation between trillions of semi-autonomous units, each running its own internal economy while contributing to a shared structure.

Cooperation is enforced chemically, not morally.

Final Notes

A single human cell:

- Contains thousands of molecular machines
- Executes millions of chemical reactions per second
- Maintains electrical, chemical, and structural order
- Repairs itself while operating
- Communicates, adapts, and decides

And this is **one cell**.

A human is not built from cells the way a wall is built from bricks.
A human is built from cells that are already astonishingly alive.

To make a human, you must first succeed at making this —
thirty-seven trillion times,

without central control,
over decades,
using atoms forged in dead stars.

If the system ever pauses to wonder how it exists at all,
that complexity has crossed yet another threshold.

The assembly is complete.

3.How to Make a Universe That Can Grow a Human

Assembly Instructions (VERSF-Compliant)

Objective:
Construct a universe capable of producing humans without direct design.

Constraints:

- No external guidance
- No predefined forms
- No guaranteed outcomes

Only lawful emergence is permitted.

Step 1: Begin with Perfect Equilibrium

Start with nothing that can be distinguished.

This state must be:

- Uniform
- Stable
- Featureless
- Without preferred locations, directions, or values

In VERSF, this baseline is not absence but **the Void**: a condition of perfect equilibrium against which all difference will later be defined.

This equilibrium is essential.
Without it, nothing can be measured.
Without measurement, nothing can exist as a thing.

Do not introduce particles yet.
Do not introduce time.
Do not introduce laws.

First, establish the reference state.

Step 2: Permit Distinction Without Forcing It

Allow the possibility of deviation from equilibrium.

These deviations must be:

- Local
- Temporary
- Reversible at first

A distinction is not yet an object. It is merely a *difference that persists long enough to be noticed*.

This is the most delicate requirement of the entire construction.

If distinctions collapse instantly, nothing forms.
If distinctions persist too easily, structure freezes.

VERSF requires a **narrow regime** where differences can exist, interact, and sometimes survive.

Step 3: Define Change as Accumulation, Not Motion

Do not add time as a background dimension.

Instead, define **change** as discrete updates — tiny micro-events that accumulate until a system becomes measurably different.

In VERSF, these are *ticks*.

A tick is not a moment.
It is a resolved update.

Time will later be experienced as the *counting of these updates*, not as an external flow.

This ensures that:

- Nothing changes without cost
- Persistence requires continual maintenance
- History becomes real

A universe that can grow humans must remember its past.

Step 4: Allow Stable Patterns to Outcompete Unstable Ones

Once distinctions persist across multiple ticks, permit interaction.

Some configurations will:

- Cancel out
- Collapse back into equilibrium

Others will:

- Reinforce themselves
- Channel future change

These self-stabilising patterns are the precursors to particles.

Do not specify particle types in advance.
Let them emerge as **informationally admissible structures** — patterns that can survive repeated updates without violating consistency.

This is where physics begins.

Step 5: Let Space Emerge from Relationships

Do not define space as a container.

Instead, allow relational structure to form between persistent patterns. Distance arises from how many updates are required for one pattern to influence another.

Nearness is not geometry first —
it is **interaction cost**.

Only later will this relational web resemble what humans call space.

This prevents absolute frames and allows locality to be emergent rather than imposed.

Step 6: Permit Energy as Structured Imbalance

Energy is not substance.
It is the capacity to drive further change.

In VERSF, energy corresponds to **how much ordered deviation from equilibrium is stored in a pattern**.

Patterns that can release energy in controlled ways will dominate.

This leads naturally to:

- Fields
- Forces
- Conservation rules

Not because they are imposed, but because patterns that violate them do not persist.

Step 7: Enable Chemistry by Allowing Hierarchical Stability

Once particle-like patterns exist, permit them to bind.

Binding must:

- Lower total instability
- Increase persistence
- Allow reversible rearrangement

This creates atoms.

Atoms that combine flexibly without collapsing enable chemistry.

Chemistry is essential because:

- Humans are not static objects
- They are dynamic processes that must rebuild themselves constantly

Rigid universes do not grow humans.

Step 8: Introduce a Narrow Window for Liquid Water

This step is critical.

The universe must allow:

- A temperature range where water remains liquid
- Electromagnetic interactions strong enough for bonding but weak enough for rearrangement

Water is not merely a solvent.
It is an **information-friendly medium** that allows complex patterns to explore configuration space without disintegrating.

Without this window, complexity stalls.

Step 9: Allow Matter to Remember Itself

At some point, chemistry must cross a threshold.

Certain molecular arrangements must:

- Reproduce imperfectly
- Persist across generations
- Encode information about their own structure

This is not yet life in the human sense.
It is **history-aware chemistry**.

Once this occurs, selection takes over.

The universe no longer explores blindly.
It explores directionally.

Step 10: Permit Escalating Scales of Organisation

Ensure the rules allow:

- Cells

- Multicellular cooperation
- Specialisation
- Nervous systems

Critically, no level may fully dominate the others.

Control must remain distributed.

This prevents early lock-in and allows intelligence to remain adaptable.

Step 11: Allow Brains to Model the Universe That Made Them

Eventually, some systems will:

- Model their environment
- Model themselves
- Model the future

These systems will experience:

- Continuity
- Identity
- Meaning

From the inside, this will feel like consciousness.
From the outside, it will look like information processing across time.

Both are correct.

Final Requirement: Close the Loop

A universe capable of growing humans must allow its own structure to be **known from within**.

This is not a bonus feature.

It is the completion condition.

When a human looks at the universe and asks how it came to be —
when it discovers that time is change, that matter is pattern, that identity is persistence —

the universe has succeeded.

Not because it created a human,
but because it created something capable of understanding the rules by which it was created.

Completion Status

You have not built a machine.
You have not written a script.
You have constructed a framework in which meaning can emerge without being programmed.

A human is not the goal.
A human is a **consequence**.

And that is the only way such a thing can honestly exist.

4.How to Unmake a Human

(Reverse Assembly Instructions)

To understand what a human truly is, begin dismantling.

Do not start with identity.
Do not start with memory.
Those vanish early.

Step 1: Remove the Story

Strip away language, beliefs, roles, memories, names.

Nothing physical is lost.

The human still breathes.
Cells still divide.
Electrical signals still fire.

Meaning was never stored in matter.
It was carried by pattern.

Step 2: Disassemble the Systems

Separate organs into tissues.
Reduce tissues into cells.
Reduce cells into molecular assemblies.

At this scale, there is still astonishing complexity, but no intention.
Enzymes catalyse.
Membranes regulate.
Gradients drive flow.

Purpose has dissolved into chemistry.

Step 3: Reduce Molecules to Atoms

Break proteins, lipids, carbohydrates, and nucleic acids into their atomic components.

You will find:
• Carbon
• Hydrogen
• Oxygen
• Nitrogen
• Phosphorus
• Trace metals

These atoms are identical to those found in rocks, oceans, and distant stars.

Nothing here remembers being alive.

Atoms do not know they were part of a human.

Step 4: Examine an Atom Closely

An atom appears solid only from a distance.

Up close:
• A tiny nucleus sits at the centre
• Electrons occupy vast probabilistic regions around it
• Most of the volume is empty space

If the nucleus were the size of a marble, the electron cloud would extend hundreds of metres away.

There is no miniature solar system.
There are no defined paths.
Only likelihoods.

Atoms do not touch.
They interact through electromagnetic fields — repulsions and attractions between electron structures.

What feels like solidity is resistance, not contact.

Step 5: Compress What Is Actually There

Remove the empty space.

Collapse every atomic nucleus together.

The total remaining mass of a human — all protons and neutrons combined — would occupy a volume roughly comparable to a bacterium.

Everything else was spacing.

A human is mostly distance.

Step 6: Observe What Remains

At the lowest level, there is:
- No colour
- No warmth
- No sensation
- No self

Only structured imbalance.
Only fields interacting.
Only patterns persisting long enough to matter.

Atoms combine into molecules not because they want to, but because certain arrangements are more stable than others.

Stability is the only preference nature requires.

Step 7: Notice What Never Appeared

You will not find:
- Love
- Fear
- Meaning
- Suffering
- Hope

Not because they are illusions —
but because they are **not stored at this level**.

They exist only when patterns are maintained across time.

Step 8: Reassemble Conceptually

A human was never the atoms.

A human was:
• The way atoms were arranged
• The way they exchanged energy
• The way patterns endured across change
• The way information accumulated without collapsing

Remove the pattern, and nothing recognisably human remains.
Remove the atoms, and the pattern cannot exist.

Both are required.
Neither is sufficient alone.

Closing Observation

A human is not a thing made of matter.
A human is a process that matter temporarily performs.

Mostly empty space.
Briefly organised.
Continuously rebuilt.
Aware, for a while, that it is happening.

When the organisation ends, the atoms persist.
When the atoms persist elsewhere, the human does not.

This is not a flaw in the construction.

It is the condition that made the construction possible.