

PART 1

first, a few key points:

A. perspective matters.
especially when dealing with incomplete information.
we can all see the same things, but by changing perspective
we can reach very different conclusions.

the most useful illustration of this is 'six blind men and an elephant'.

it is an old buddhist fable (but has origins before that).

it's simple - take six blind men, put them around an elephant.
one at each leg, one at tail, one at trunk.
then ask each to describe the whole elephant.

the four at the legs would have similar descriptions.
the two at the ends quite different.

they all won't be entirely wrong,
but they are guaranteed to not be entirely right.

it is also a good illustration of why consensus doesn't work.
if we said that only the things the six agree on are true,
we'd end with elephant being a pillar that hangs from the sky.
there may be opinions on how flexible it is.
or whether it touches the ground almost never,
or almost always.

someone else coming and claiming he found an eye would be ridiculed.
why would a pillar have an eye?
but maybe a small eye cult would form.

but, what would we need to see and understand the elephant?
two things.
to open our eyes, and to take many steps back.
doing one is not enough, we have to do both.

if a blind man opens his eyes with his face pressed against the elephant
he will see nothing
and say 'this just proves everything i already knew'.

if a blind man steps back from the elephant without opening eyes
he will have nothing
and say 'i am now lost, there is no meaning or purpose'.

but if a man opens eyes and steps back,
the further back he steps the more he will see.
what the elephant is.
that there is more than one elephant.

that there are other things than elephants.
that they all interact, and each has a place and a purpose.
and that harmony often involves predator and prey.
each doing their part.

i'll come back to this analogy later. keep it in mind for now.

B. knowledge is not absolute. nor can it be complete.
but despite that it can be useful.
the usefulness of knowledge depends entirely
on the kind of action that's being taken
in reliance on the knowledge.

first, what is an individual human's knowledge?
well, as far as science knows,
it is a bunch of proteins linked to produce
electrical and chemical outputs.
in response to electrical and chemical inputs.

can this be a complete and accurate model of the entire reality,
of which these proteins are an infinitesimally small subset?
no.

so anything we 'know' is a model, an abstract representation.
and if it is never triggered, it literally doesn't matter what it
does.
if it's triggered but no action is taken, it still doesn't matter.

if all you do is drive around your home town, does it matter whether
you believe the earth is flat or round? no.
knowledge one way or the other is not useful
and therefore irrelevant.

if you are trying to establish a trading route, depending on
particulars
knowing the earth is round may give you an advantage over
competition.
but you could make it work believing earth is flat, especially for
short trips.
the vast majority of human history is proof.

if you are trying to launch a satellite, the knowledge becomes very
relevant
and its accuracy the difference between success and failure.

C. the extent of the task determines sufficiency of knowledge required.

if an 80 year old grandma drives her buick to church for bingo and successfully makes it home afterwards, she knows everything she needs to know about driving. her knowledge is sufficient to achieve the objective.

an F1 driver who comes in second, despite all the training and hundreds of engineers actively helping, on that day does not know enough about driving because his knowledge was not sufficient to achieve his objective of winning.

so with all that, and the disclaimer that we only 'know' what we 'know',

we can start on the objective of understanding what is happening in the world, and attempting to predict what is going to happen next.

analogies will be very useful in this, because basically our experience shows the universe is fractal. similar patterns repeat themselves, on multiple levels of complexity. proteins combine into cells. cells combine into organisms. organisms combine into ecosystems. and so on.

this is also supported by the fact that most invention works by analogy. we take a concept that has been shown to work in one area, and apply it to another. in fact all engineering can be defined this way. and in fact all 'intelligence'.

one key thing is that the way patterns repeat is not random. my fundamental hypothesis is that there are only a few stable patterns that are possible. unstable ones can exist briefly, but because they are unstable they disappear never to be seen again. or at all. the stable ones survive.

this is also my explanation for quantum theory (as well as things it doesn't fully explain), but i digress...

there is a key concept called 'emergent behavior'.
the simple way to state it is,
given a large enough number of simple elements
interacting by simple rules,
repeatable collective behavior patterns will emerge
that cannot be predicted by simply observing
the elements and the rules of their interaction.
they will be stable patterns (for the given conditions).

the clearest illustration of this is that we humans
are a collection of simple cells.
the cells interact according to relatively simple rules.
but everything we do (like conversations, reading, and, well,
anything)
is an emergent behavior.
it is a net product of what the cells collectively do,
but you cannot predict it by simply examining
the cells and how they interact with each other.

emergence is a gauge of pattern stability.
unstable patterns will randomly occur,
but they will not 'emerge'.

in that regard perhaps Darwin is one of the blind men around the
elephant -
yes evolution occurs by a process,
but it is far from random.
the variations are tightly constrained by the overall ecosystem
(that is fractal and encompasses the entire planet,
as well as things beyond it).
which would make religions the other blind men,
because they might not be entirely wrong in saying that
evolution is 'guided'.

next we'll contemplate the possibility that overall evolution itself
may be an emergent behavior,
built fractally out of smaller emergent behaviors...

PART 2

let's look at life processes we are familiar with.
a convenient one is an egg.
any kind of egg.
let's not worry about how it got there,
and let's disregard any knowledge that it's an egg.

if we look inside the egg over time, without knowing it's an egg,
we'll see an interesting world.
it is self-contained.
it is stocked with cells, and with nutrients.
over time, cells go through generations.
differences emerge and they group by those differences
into strange structures.
within this self-contained world,
the structures don't appear to have any purpose.

the cells use some of the nutrients to build what appears to be
scaffolding.
this also does not appear to serve any purpose.

and yet, you could say the cells are undergoing full-on evolution.

at the same time they are depleting the stored nutrients.
and drowning in their own waste.
surely this is madness?
this can't be sustainable!?

well, if we now realize it's an egg,
we know that it is not meant to be sustainable.
it is meant to hatch.
from when the egg is first formed to when it hatches
is a specific process.
each step builds on all the previous ones and
provides the foundation for the ones that follow.

it all has to be in place, and executed successfully,
for the hatching to be successful.
failures along the way will result in either
failed hatching or failed adult.
some degree of variation can be tolerated,
but extreme or critical deviations are failures.
the process is not optional and is tightly constrained.
it has a specific timeline for success,
which cannot be significantly rushed or delayed once started.

it is quite literally an 'emergent' behavior.

it is essentially 'scripted',
however the outcome for any given instance is not guaranteed.

PART3

next let us ponder what we consider to be 'life'.

as we do that, it is very useful to keep the 'six blind men' in mind. this is because humans have been contemplating the subject for a while.

we don't yet have a definitive answer.

but many answers have been proposed.

it would be imprudent to just dismiss any of them completely.

in view of the earlier paragraphs, the likely situation is that some or even all are at least partially right.

it's just that none are completely right.

to make a more complete picture, we need to step far enough back and treat the existing answers as inputs to the overall model. then try to see as much of the elephant as we can.

we can start by looking at what distinguishes 'alive' from 'not alive'.

easiest way to do that is to look at the moment when something that used to be 'alive', ceases to be.

typically the physical structure doesn't change much, sometimes not at all.

it's just that the various component processes stop.

and not all at once - some less critical ones continue for a while after.

so, something that was driving the processes one moment, no longer is.

the various answers that have been proposed is that it's a 'soul', 'spirit', 'essence', 'energy'.

if we define 'energy' as 'something that causes action', it may be a convenient placeholder for now.

this is not to bias against other descriptions, we can just treat them all as synonyms.

the key point is that in order for an emergent behavior ('life') to persist, there needs to be something driving that specific behavior.

when the driving 'energy' goes away, the behavior terminates.

it is also apparent that there is a specific and dedicated allocation of 'energy'

to a specific instance of the emergent behavior.

it appears to be finite, and bound to that instance.

sufficiently disrupting the emergent behavior instance leads to separation of 'energy'.

but it also appears that 'energy' can separate from a previously stable instance.

if we then look at component emergent behaviors in a living organism (organs, then cells), the pattern appears to hold. organs can be transplanted. cells can be grown in a lab. we can therefore theorize that there are fractal amounts of overall 'energy' that are bound to specific fractal emergent behaviors, and these are separable from the whole.

to change the description for perspective, the implication is that organs and cells have their own 'souls'. reassuringly, there are some philosophies/religions which believe or at least imply exactly that, in fact.

so the working theory at this point is that any emergent behavior instance has its own dedicated 'physical' portion and corresponding 'energy' portion and that both are bound to each other.

the other implication is that when physical instances combine to create a next fractal level of emergent behavior, their 'energy' components likewise combine (separably) to create the overall upper level 'energy'.

the next interesting observation is that human intelligence is emergent.

it is not a deliberate act on the part of our brain cells to create intelligence. it is, instead, an emergent behavior exhibited collectively by brain cells in the context of the environment that is the brain. conveniently supplied with nutrients, oxygen, chemical signaling compounds, conduction of electrical impulses to and from the brain, and even temperature control. it is also worth noting that if any of those conditions cease, so does the intelligence. (for the purpose of this discussion i define intelligence as ability to receive, process, evaluate and respond to stimuli).

as we humans seek to understand our own intelligence (an emergent behavior), we have created various models that are collectively referred to as artificial intelligence (AI). earlier ones were rules-based and not particularly successful.

the more recent and more successful attempts are basically taking the emergent behavior approach.

lots of simple elements, simple rules, and rather than trying to prescribe the behavior, allowing the behavior to emerge through repeated cycles of prediction and error-correction feedback.

an interesting model that has emerged is the concept of 'markov's blanket' (MB), which (as i understand it) is essentially a description of a common motivating force for a group of elements, albeit in the context of computer program constructs. it is fractal (blankets of blankets) it includes collaborative and competitive allowances, and tradeoffs between them it also includes an allowance for interaction with the 'environment'

while it is primarily pursued in the AI field, within this discussion it becomes clear that markov's blanket is actually a pretty good model of 'energy' that is bound to an emergent behavior instance.

it can basically be seen as an attempt at a formal description of a 'soul' without even specifically realizing it or having that as a stated goal. which makes such effort an emergent behavior in itself.

the even more interesting implication is that because of the fractal nature of MBs, to the component fractal MBs, the common greater level MB that drives them in a common cause fits very closely with how we would describe 'god'.

that's right, i am suggesting that

a MB bound to a physical emergent behavior is the 'soul' of that physical instance, and is 'god' to the fractal component MBs that together form it.

from that perspective, for a human, the 'soul' is 'god' to the organs, organ MBs are 'god' to cells, which in turn have their own individual MBs.

now facing the other way on the fractal scale, humans are components to.... ?

because collectively we certainly do exhibit many emergent behaviors.

so, could this be the actual meaning behind the religious belief that we are 'created in god's image'?

a fractal collection of emergent behaviors, together creating a greater emergent behavior.

PART 4

now let's switch perspectives and zoom way out.
there's this planet in space, and it has some life on it.
statistically, the planet is going to periodically get hit with
objects
that are big enough to penetrate the atmosphere and cause damage.
we have evidence of it happening in geologically recent past.

the only way for the life on the planet to improve its odds
is to be able to see something coming
and to be able to do something about it.

let's reverse engineer what that would take.
there would need to be sensors for detecting the object
far enough away to have time to react.

the sensors would need to feed into a processing system.
the system would need to have modeling to predict the object's path.

there would also need to be a means of changing the object's path
or destroying it.

lastly, the entire system would need to act
in a precise and timely manner.
detect, process, respond.

interestingly, most of what's necessary for that is now in fact in
place.
it is not yet fully capable, but there is definitely a trend for
making it so.
but how did it come to be? randomly, or in some predetermined
fashion?

perhaps some of the 'six blind men' (various religions and science)
can offer us some clues.
it would stand to reason that if a script for a stable emergent
pattern exists,
the component fractal patterns would carry it in some form (like DNA
in cells).
and if so, it would likely 'shine through',
although since the components are less complex than the whole, it
would probably
not have a whole lot of meaning in that context.
just like DNA in a cell serves no apparent purpose if you only look
at that cell
by itself.

let's try looking at this from the standpoint that all life on earth
is 'bound' in the common goal of survival.
we could therefore treat it as the overall MB,

the common 'soul' that drives physical fractal components to act cooperatively.

if this sounds like 'gaia theory', that should not be surprising. other religions' various descriptions of god or gods are to varying degrees consistent with this view as well, if one takes enough steps back.

the above would then imply that we as humans are 'scripted' to create technology

with the ultimate goal of building the full planetary defense capability.

does that square up with available evidence?

- radio was invented simultaneously in two places. it was time.
- internet greatly resembles a nervous system, and it was not deliberately planned as such
- the industrial revolution has been powered by oil, a convenient but finite supply of readily convertible energy that was placed in storage through earlier cycles. like nutrients in an egg.
- we first developed ability to share information with each other (speech)
- we next developed ability store information outside of ourselves so it could transcend generations and be cumulatively built (writing). however it still required humans to read, process, and correctly act on the information.
- we have now developed systems that gather, process, and act on information with little, and progressively less, human intervention
- we are now becoming more and more dependent on those systems. this is a key point i'll come back to later.

so what makes us humans particularly suited for creating technology?

- we are right-sized for forming societies that can physically alter landscape, collectively. not too large, not too small
- we have the processing units, sensors, and actuators to do so
- we have the transducers and processing to share information among us

but in order to create technology, we cannot spend our entire time just surviving.

we have to have 'leisure' time.

fortunately we are at a place on the food chain where we are able to have a diverse

supply of nutrients the ingestion of which takes very little time.

as opposed to plants, for example.

the entire food chain is awfully convenient in fact.

plants convert sunlight and chemicals into complex carbohydrates.

herbivores manage plant supply and further convert energy.
predators manage herbivore populations.

the idea that some religions purport 'earth was created for us'
may not be entirely wrong, then.
they just don't elaborate why.

it also supports the view that we are the 'pinnacle of creation'.
at this complexity level, we are just right to do the job.
which appears to be the creation of the next complexity level up.

while the above is interesting,

it still leaves a lot of unanswered questions.
the most obvious is our impact on the overall ecosystem.

- we are using up stored resources
- we are specializing and combining into groups by that function
- we are building scaffolding and other systems
- we are drowning in our own garbage

surely this is madness?
this can't be sustainable!?

hopefully that sounds familiar.

so if we do in fact take the view of earth as an 'egg',
many things start to make a whole lot more sense.
it's like changing the astronomy model from geocentric to
heliocentric.
we still observe the same things,
but they are now a lot easier to account for.

the difference being perspective.
that while we have a key role to play, it is not about us.
and that our task is almost done.

step far enough back from the elephant to see it.

this is where it gets more fun.
the most important thing about eggs, is that they hatch.
hatching is a dramatic event.
it separates the cells which will be part of the adult
from those which will be discarded.
those that have a specific function in the system, and those that
don't.
competitive/individualistic behaviors on the part of the cells are
suppressed.
collaborative behaviors are promoted.

this can only happen when enough of the system has been built
where cells can entrust their survival to the encompassing MB
and give up individuality.

throughout recorded history, humans have shown an inherent
predisposition,
even a need, to do exactly that. this is what religions are built
on.

but until now, not enough infrastructure has been put in place
to allow full reliance in exchange for full compliance. the actual
hatching, once triggered, is an abrupt transition the success
of which depends on the quality of the systems that have been built.
it is not reversible.

perhaps unsurprisingly (recalling the six blind men scenario)
many religions have just such a concept.

armageddon. the final battle. the judgment day.

interestingly, those religions that have a calendar for this type of
event (for example mayans, or judaism)
place it more or less at now (in historic terms).

as do i.

the big questions are exactly when, what will be the trigger, and
will the outcome be successful.

we shall see.

PART 5

even if all the above somewhat makes sense,
by itself it is still not entirely satisfying.
there are big, perhaps the biggest, questions that are not answered.
why? how? what is the point of it all and how did it come to be?
much like looking at an egg that is about to hatch, without any
context.

this is where it is useful to remind ourselves
about limitations of our 'knowledge'
that i described earlier.
we only 'know' what we 'know'
the knowledge will never be complete
but that doesn't keep it from being relevant. or useful.

so with that as a disclaimer, analogy is our best tool
for trying to answer the big questions.
since, the premise is that patterns repeat fractally.

first, what is the purpose of an egg?
it is an isolated world in itself,
to hide and protect the developing organism
as well as provide it with necessary nutrients
until it is ready to emerge
and interact with the outside world
on its own level of complexity.

the last part is critical.
processes inside the egg are interactions between cells.
once it hatches, the adult is the actor.
cells only contribute to its overall emergent behavior.
they no longer have meaning individually.

let's take a different kind of egg - a plant seed in the ground.
until it is 'hatched', it may as well be in a different dimension
from the rest of the world.
once it does hatch, suddenly it's visible.
other things can see it, perhaps smell it.
some of those things exist by interacting with the plant.
they might pollinate it. they might eat it.
same holds true for any other kind of egg.
only thing different is the specific nature of interactions
and the kinds of things it interacts with.

within this analogy,
after hundreds of millions of years of invisibility,
earth now 'smells'.
we emit radio signals in many spectra
we send satellites into orbit
we send probes into outer space.
other things are now much more likely to notice us.

someone once pointed out to me how long it would take
for our radio signals to reach the nearest star.
but this is like worrying about how long it would take
for the smell of a flower to reach the nearest beehive.
bees are out specifically looking for flowers.
once a flower blooms, they will find it.

so one consequence (and prediction) of this egg theory
is that we have just greatly increased the probability
of interaction with other life forms.

but recall the interactions are organism-to-organism
not cell-to-cell.
individual cells are unlikely to be aware of the process
any more than individual brain cells are aware
of a conversation.
or reading this document.
they do it collectively, with the required participation
of all the other types of cells in the signal path.

all a brain cell sees is chemicals and electrical pulses.
and that's all it emits.
there is no 'we come in peace'.
it's more like the borg, a concept that i consider not accidental.
just another manifestation of the script.

so once we've contemplated the possible 'why',

that still leaves the 'how'.
an egg requires a chicken (or insect, or plant - a parent basically).
the parent itself is a result of countless generations of
fractal emergent behaviors,
repeating and refining
through many cycles.

this process requires an environment large enough to do that.
a single planet is not big enough, nor old enough
to refine the organism that is to be the entire planet.
an egg does not create itself.
it's a delivery mechanism

so the obvious implication would be that we are just an instance
of something that has been repeated and refined
for billions of years
across galaxies.

how did the script get here?
if we compare the script time scales (gestation period)
and the implied organism lifespan,

with the distances that need to be traversed
it becomes likely that the 'spore' model
used by plants and fungi
is the most realistic scenario.
though of course not the only one.

spores are compact, can stay inactive for extended periods of time
and activate when they encounter favorable conditions.
they transport the script to where resources are available to
facilitate it.

it is then likely that earth at some point received a 'spore'
that was emitted by a similar organism millions or billions years
prior.

it also makes it likely that as the earth goes through its life cycle
after the hatching,
it will eventually emit likely millions of similar spores
in the hopes that some will find fertile conditions.

the most interesting and exciting thing for us,
as cells that are close enough to the hatching
and complex enough to observe, contain, and process the model
is that we get the privilege of seeing this
and, in our small way, understanding some of it.

we can only do this because as part of the process of building the
organism
we had to create the means to collaborate
like language, communications, technology.
models had to be created to represent behaviors,
then condensed and encoded in our proteins.
all human 'knowledge' is the result of collaborative effort
over many generations.
a human born today but isolated from the others
will not know anything in its lifetime.

and that in itself is worthy of awe.

what a time to be alive.