We live in a well formed world.
But *how* is our world formed?
What is consciousness?

SEARCH FOR PUTNAM

This is my way of describing what I know of Peter Putnam, his vision, his model. These are my interpretations of Putnam – an attempt to understand and distill- Barry Spinello, Templeton, Ca. 2023

Peter Putnam (1927-1987) was not widely known in his lifetime, but he laid the groundwork for a revolution in cognitive science. His influence is likely to spread in decades to come as the world catches up with his pioneering studies on the operation of the nervous system. With this insight of how the nervous system works, Putnam worked out its implications for virtually every branch of human knowledge, from the foundations of mathematics and physics, to psychology, the arts, social science, and the diversity of human cultures, history, religion, and philosophy.

from the web site: peterputnam.org

A CURRENT DESCRIPTION FROM NEUROSCIENCE:

The brain is a multi-layered ecosystem of hierarchically organized neurons, circuits, networks, and brain areas. The neurons emit pulses called "spikes" that last about 1 millisecond. Each neuron fires (emits a spike) on the order of 10 times per second.

These neural spike signals circulate throughout the brain in complex flows and interact with other signal patterns and channels through extensive multi-layered feedback loops and synchronized oscillating firing patterns.

Thinking…involves interactions between signaling pathways.

Decision-making appears to be a "winner take all" process in which many different neuron clusters representing alternate action choices compete by inhibiting each other. Evidence supporting each action choice increases the spiking activity of the neurons representing that choice. These neurons inhibit the neurons representing other choices, leading to a multi-way competition among neuron clusters. Eventually the evidence supporting one choice as optimal overtakes all the others and succeeds in suppressing the alternatives, becoming the clear winner.

Once one hypothesis or choice begins to overtake others, the activated neuron cluster (called a "cell assembly") sets into motion the processes of action and motor control that produces a behavior of some sort, such as announcing a decision or acting.

The above description is a dramatic simplification of what is actually occurring based on current theories and models. Almost none of this has been definitively determined yet.

Description provided by Paul King, Neuroscientist

The above quotation describes cutting edge theory in neuroscience. It closely mirrors what Putnam wrote and taught about sixty years ago. Putnam's description is in the language of physics model building. Neuroscientists need to *definitively determine* that language before it becomes real for them. (go to page 10 for **"PUTNAM'S MODEL")**

Every thousand years or so someone comes along and integrates the current science and current morals into a single comprehensive world view - think Augustine and Aquinas. I believe Putnam is in that order.

This paper is written in the broadest strokes for students, artists and engineers struggling to find identity in a world of conflicting vocabularies.

WHO WAS PUTNAM WRITING FOR?

This question is at the heart of what Putnam is about and why he is either relevant or irrelevant. Putnam makes an assumption. If his

assumption is correct – the model has worth. If not, then there is no need for the Putnam model.

This question is best answered by looking at the preamble to "On the Mathematics of Brain Operation," June 1974. Putnam's late paper after the basic model is understood.

In this preamble Putnam describes an: "emerging engineering class which has an approach and attitude that is 'rapidly' taking over." This 'engineering class' will need the model as it applies the math and physics approach to all of life.

I (Barry) best understand this concept (the math and physics approach to all of life) by calling forth a scene from the movie Apollo 13. In this film the astronauts are at an impasse and will die in space without their problem solved by the earth-bound team. We then see twenty scientists on earth put aside egos, politics, self interest and set to "work the problem." Imagine if such an approach (the engineering attitude) would apply to all manner of political and human problems.

But even more than this, by way of explanation: the top level scientists: Newton, Einstein, Bohr, etc. etc., approach the problems in mathematics and physics in a ruthless, uncompromising way. The math and physics formulas they invent must be 100% correct - no compromise. But the problems they approach are narrowly defined to begin with: only within math or physics. The problems in life are broad and messy.

Not having adequate insight for "actual answers" we approach the problems in life in a more lax way. We compromise to get along.

Putnam is saying an engineering approach to life will be as uncompromising as an engineering approach to engineering – and this engineering approach, or attitude to life is beginning to take over. Is it? IS there an emerging engineering class with an emerging attitude developing? These are the people who will redesign the brain and body and inhabit the moon and space over the next centuries. Putnam is writing for them.

NOTE: Engineer is defined in the broadest sense: one who struggles with self for truth. An artist is an engineer. An engineer is an artist.

Freud described the unconscious. Putnam peels the onionskin back one more layer to provide a physical description of how decision is arrived at. That is "the model." Further down I will describe how.

WHEELER'S RELATION TO PUTNAM
(*John Archibald Wheeler - Professor Emeritus Physics, Princeton - lifelong mentor of Putnam*)

Wheeler comments in his book: Geons, Black Holes & Quantum Foam, that, (paraphrasing), Putnam thought all knowledge could be knowable through physics. This is directly opposite from Putnam, who often said the laws of physics open up, but transcendently, each layer opening to a new layer. Fuller (**Robert Fuller:** see appendix #3) has said that Putnam's best descriptions are in his letters to Wheeler. Why does Wheeler never "get" or understand Putnam? Is it because there is at bottom no substance in Putnam? Nothing real? Just a chimera. Or is there a generational schism between them? Is Putnam introducing in his model, *within science*, ideas that, in some ways, side-step old time science?

I think this question is best addressed by looking at pages 10-14 from On the Mathematics of Brain Modeling, 1974: "The Effects of Statistics". These pages are a great eye opener in understanding Putnam's model.

In brief: *….if we have a group of molecules up in one corner of a box, they will spread out uniformly over the box. …However…given enough time…. there is a certainty they will return to the corner…... (and this seems to defy the laws of thermodynamics, yet is statistically true) It may very well be that, as with statistical mechanics, the laws of brain operation may have violation yet be overwhelmingly correct in practice, due to redundancy and other factors*. And "correct in practice" is good enough.

Did Wheeler patronize Putnam because of the Putnam fortune? (**The Putnam Fortune** is described in appendix #1) Or was there more to it than that? Wheeler's statement: if there is merit to Putnam's ideas they will emerge in time. But Wheeler never really "got" Putnam.

DIVINATION
Putnam is all science yet gives credence to divination in his paper: The I Ching 1971. How? Why?

The paper gives insight to Putnam's way of thinking. What is important for survival (personal, family, society) is that all pull in the same direction. When faced with a path, A or B, it's best if all agree and try that one direction, rejecting the others. Otherwise confusion, strife, failure can ensue.

Historically, referring to an oracle can create unity, not that the oracle has special insight, (it doesn't), but it allows a single path to be tried assuming all believe in the divination of the oracle (we don't anymore). But we believe in the democratic system, in electing leaders, and this is sort of the same type thing.

And what of religious superstition? It functions in much the same way as in divination enabling people to coalesce around paths in life for which no definitive answers are yet present.

"*Monks swallow the absurdity of miracles to maintain values as yet too fragile for probing."* Putnam quoting Dostoevsky from: Everette/ Wheeler Model, 1970

Putnam ignores superstition. It will adjust or fade, as "answers" are found. (see **SUPERSTITION** appendix #2) (go to pg. 35)

But real answers happen only with a *differentiation of causal insight.* This phrase is key to Putnam.

DIFFERENTIATION OF CASUAL INSIGHT

Causal insight is HOW the world works as opposed to the WHY the world works. Causal insight, HOW, is embedded in the laws of physics. WHY is traditionally in the domain of what is broadly called religion. WHY, encompasses morals (what is good), and policy (rules we live by). Fundamental to Putnam is to bring the how and the why together in one comprehensive world view. Or better yet- how to give a physics meaning to WHY questions.

Why is it important to give a physics meaning to WHY questions?

Up until very recently virtually every scientist, artist and philosopher used the Religion and God words all the time. What were they? "believers?" "snake handlers?" How strange?

And on the other side of that divide: all of the totalitarian dictators of modern times were "enlightened" away from the superstition of religious belief, unhinged from faith in religious continuity - relying on "themselves" for the truth.

And so we are faced with Einstein, Spinoza and T. S. Elliot's belief system vs Stalin, Mao and Pol Pot. This discrepancy alone warrants a closer look ---

Communists are as religiously zealous as Christians, maybe more so in the current context. (Holy)communion and commun(ism) are rooted in the same motivation- universal brotherhood. They differ only in the means to reach that goal.

Putnam: *"…the professed long range political aim of the two major social forces of the day, which at once unite and divide mankind, Marxism and Christianity, is precisely the same. All Christians as well as Marxists must believe in communism as an article of faith. (and both finding it much harder to reach than they expected). They differ only in the tactics they regard essential to achieving it.* Linkage of Syntax, Oct 3, 1966 pg. 54

DIFFERENT TACTICS*:* Marxists use brute force to change minds: the hammer and sickle. Christians rely on the Cross: a personal and painful inner struggle for truth.

In attempting to reach the vision Christians downplay science as a basis for faith. Communists make two mistakes, one big, one small, as described below-

First some historical perspective:

1. The military is the first organizer of human conduct. It's underlying emotion is rage - charging your neighbor with swinging sword and taking his possessions.

2. Capitalism is the next - making things that people want (buy). It's motivation is greed. Capital subordinates the military by paying its bills and giving respect: medals and parades.

3. Curiosity is next: the search for causal insight. An Emerging Engineering Class subordinates capital by providing what capital wants: money, and giving it what it needs: ideas to build on.

Communisms SMALL mistake: that capitalism is evil and must be eliminated. Nothing could be further from the truth. Capitalism provides goods and services for an emerging engineering class. Goods and services translate into freedom. Capitalism is 'subordinated,' not eliminated. It is supported with money – a small price to pay for the goods and services that make unfettered research possible.

The REALLY BIG mistake-
Standing firmly in the present Communists cherry pick items from the past and say: "this one is good.. this one is bad… If only Columbus had been kinder to the Arawaks what a more just world this would be…"

Such an approach to the past from the present is a total absurdity.

History is “one.” A molecule changed anywhere would change everything. This is beyond obvious. It is fun to play the “what if” game. We do it all the time. But it is vain and power hungry to seriously consider changing the past or knowing the future.
(see **IDEALISM** appendix #4) (on pg. 36)

We live in the eternal present. Understanding how the brain works shows how linked each of us is to what is and what was - in hard science terms.

Touching the third rail-

“God” talk comes up again and again in human discourse. Mention it in certain circles these days and you become an instant reprobate.

But a useful consideration is basic to the old testament and gives us the concept of God as the Nature of Being. “*That which is*.” In this view, God is not a person-like authority from above calling the shots, ‘outside’ of the reality, but the very fabric of reality itself. Putnam’s model describes the nature of reality by describing everything we see, know, feel, understand, and do, in physical neurological terms.

Putnam never went to church. I never saw him pray. But the heart of his model is a religious principle. The Putnam model puts a “faith” plank back in play, giving a “religious” substance, a way of talking about faith, for an emerging and uncompromising engineering class.

If you exist, and you believe in your existence and you believe in reality and you believe in the continuity of reality, that is enough. “God” is woven into the fabric of your structure. Further down, in neurological terms, I will describe how.

THE ROLE OF ART
Verbal support, poetic description, “meat” needs to be put on these bones to make them feel real and tangible. It is the job of the artists of the emerging engineering class to build an iconography for the emerging faith ideas. Giotto, Bach, Dante did it for the old. Over the centuries we anticipate the new. We anticipate that faith in random

selection and probability across a trillion connections will lead us from the beginning of life on earth to this very moment.

****

The heart pumps in tired blood, routes it to the lung for refreshing, back into the heart, and pumped back into the body for use.

A thousand scientific papers have been written to definitively describe the above process. Yet a simple lay understanding can be had in the one sentence, written above.

Can the brain be usefully described in such a reductive, simple and understandable way? That is the challenge.

Hey Mr. Neuroscientist
play a song for me…
I'm not sleepy and there
is no place I'm going to…
after Bob Dylan

****

Now I'd like to take a stab at my take on the Putnam model.

NOTE: the model is first approached reading Putnam's: Outline of a Functional Model of the Nervous System, November, 1963. Also, the same material presented in a slightly different form: Outline of a Functional Model of the Nervous System, Putnam/Fuller, 1964. (*see appendix #3 on Robert Fuller*)

For an general overview see: Union Lecture Notes on Science and Philosophy #5, Nov. 17, 1966.

For an easier paper illustrating Putnam's way of thinking: The Great Man Phenomenon, March 15,1965. These and other papers are available at the website: peterputnam.org

The papers are extremely difficult to read. Putnam gives exacting, meanings to old words and you need to get a foothold inside to begin to understand. You will not skim a few pages and get enlightenment. It took me many years to break into some understanding. But I believe Putnam's brain model works. I hope my brutally simplified lay descriptions give motivation and help with reading the papers.

I notice that Columbia is just the latest to expand it's neuroscience studies with a 200 million dollar building. It is the rage. It seems to me they dig deeper and deeper in ever smaller concentric circles, identifying areas of interest but getting no closer to "how it all works". "How it works" is not just a question of hard science, although it is precisely that, but also who we are and why we are. Until now, Neuroscientists have assiduously avoided that kind of talk. But as Peter Putnam shows, in many ways, in many places, by dwelling on details you miss the larger picture. And, as he also shows, the details do fit the larger picture.

My direct quotations from Putnam are sometimes abbreviated for purposes of continuity. These are my interpretations of Putnam – an attempt to understand and distill-

I have a confession to make. I'm a jealous person. I envy people who hold God responsible. People who are marinated in the faith of olden times.

****

Putnam's Model:

Life is a series of bodily movements. That's it. 100%. This includes talking and talking to yourself (also called thinking).

NOTE: When you "think" to yourself without mouthing the words, you are actually "mouthing the words" but holding back the sounds in "higher transference." A child says the words when she reads, but learns to hold back actually mouthing them. A microphone placed near the vocal chords apparently registers rumbling when well formed

thought is going on. *Thought is a physical act*! This is a crude reduction of Putnam's extensively developed description of "higher transference," but I think it gets at the meaning for our lay purpose.

SO - all of life is a series of bodily movements.

Why does your body move? The Hebbian principle is firmly in place. Neurons connect until a threshold is reached and the muscle is engaged. But neurons contain NO information, ever. They connect to other neurons that contain no information, EVER.

How then am I able to move my fingers over this keyboard in precisely the right way that enables you to make sense of my finger movements (called reading) and out of the jumble, understand something of the interneural connection in my brain and roughly duplicate it in your brain- and all of this provided by neurons, which do not contain any information other than connecting to other neurons, which also contain no information. That is the challenge.

Strange as it may seem, the complete and entire answer is in:

1. Hebbian connectedness – described above
2. random search
3. probability

What in practice does this mean? I will give three descriptive examples.

EXAMPLE ONE
Imagine a drive – a pin stuck in your leg. Immediately a brain scan will show neurons lighting up all over. What is happening? Neurons connected to the skin irritation are "searching" for a combination that will align together to reach a threshold. When a threshold is reached, that will do the job of connecting the neurons to the muscles in the arm and then hand and then fingers, that will twist in the practiced way, close the fingers on the pin and pull out the pin. That will answer the drive. That will stop the drive. That will solve the problem.

And this is what brain activity, neuronal activity in any animal would do.

But our animal is a human animal, and our human animal has a history. She is a spy! And the pin stuck in her leg is by an agent trying to force information.

Our spy is a patriot and well trained. Her head is full of “words.” Words that reflect her history and training. What does this mean? As the neurons begin to arrange to eliminate the pin (as in the above case) words from the spy’s history become part of the response, and insert into the response, and shape the response. The lips, the tongue the vocal chords are engaged and the prisoner shouts - “I ain’t talking!”

The above description is a brutal reduction that describes the neurologic process through which ALL of human activity takes place: random search; probability; Hebbian connectedness.

But what of the word! Broken into bits and pieces and spread through the psyche, the word is the grease that wraps into every motor correlate and defines what we call human. Further down I will describe what a word is, where it resides, and how it comes into existence.

But first let’s examine perception and memory.

We exist in two worlds: the world out there which is continuous and consists of “things in space.” And the world inside which is discrete and consists of neurons joining neurons.

We “live” in the world inside. It contains everything we know, feel, think and say. It is describes our consciousness. Reality is the interplay between the two worlds.

The question is - how we get from the world outside to the world inside and back again?

EXAMPLE TWO
A subject sits in a chair in a dark room. A light flashes on for an instant. The subject is asked what he saw. “A rose” he says. “Anything else?” “Nothing!” But a camera next to the subject would record a room full of objects.

What is actually going on? First of all, the subject did not (in a sense) “SEE” the rose.

The rose is in the room. Perception is in the head. Light bouncing off the rose enters the subject’s well understood optical system and separates into fibers, cones, strands, etc. This information, not yet in the brain, channels into the brain and is a drive.

As with the pin stuck in the leg, a scan shows neurons lighting up all over. What is happening? Across the subject’s entire brain a random search correlates neurons from the subject’s history with incoming neurons from the eye. Hebbian connections are made and these connections build in intensity until a threshold is reached. The muscles are engaged and become an act: a physical response: you say, or think, the word “rose!” You identify the object out there with a physical response. The physical response quiets the drive just as pulling the pin out of the leg quiets the drive.

A physical response-

By undergoing this activity, by saying (or thinking) the word “rose” there now exists within you an act (or act potential) , a physical response, which identifies that particular object out there which has been “seen.” This process exists for every single item in the world out there which has now become part of you inside. It is not a magical picture of the world out there. It is a translation procedure. It translates every item in the world out there that has ‘hit’ your eye (or other senses) into a neuronal combination, and is now in your nervous system as an act. (or act potential)

A CATALOGUE OF ACTS

The fact that such a translation is now in your nervous system means that by random searching that act can be connected to. It can join with other acts to reach a threshold and trigger the next move in your life.

But why is one act (or action sequence) chosen rather than a different act? The answer is in life's experience itself. What works best? What has worked best in the past? Which neuronal combination (which path) leads to a more stable, better existence?

And once a path is chosen one time and it works, it will be chosen again. The odds are in it's favor. Probability is in its favor. It is easier to choose that path a second time, and easier still a third, because Hebbian structure is in place. Structure is *strengthened* each time it is used. This is the Darwinian principle written into the life experience. And it exists for all of life, for all of time. It is the building block that defines our activity, our awareness, our consciousness. **It is <u>all</u> <u>inclusive</u>**. No shard of reality exists outside of this structure.

Putnam: *"The breaking up the chain of past history into pieces brought into parallel and establishing a relative dominance (RD) as among them, is the basic operation of the nervous system."*

Functional Model of the Nervous System, Putnam, 1963, pg. 1

But neurons do not "<u>try</u>" to connect. The entire neuronal process of connection is electro-chemical and mechanical. "We" have nothing to do with it's operation. It is probability alone that correlates and connects and leads to a response.

PROBABILITY

This extraordinary fact of our physical make-up, that probability is at the core of our existence presents a jagged disconnect. It flies in the face of every knowledge structure and every religious structure on which we rely and for which we demand certainty. It alienates every person who has a 'self' and a 'me' and a singular identity of

importance to protect. It threatens the very structure of self regard. A*nd this is why important people reject this understanding of how the brain works - it threatens their self image.*

But it also describes a profound truth of existence.

Probability reintroduces the concept “faith” into a pure science environment. It reintroduces, dare we say, the old-time chestnut “religion” and creates a platform on which all religious structures and all philosophies that have found a way into our brain, can compete with each other and in competing, find a way of rectifying each to each.

For an Emerging Engineering Class probability does not present as an obstacle. It is an organizing principal for connecting the jingle jangle of competitive vocabularies existing in the world out there.

Can we unstitch these several very loaded paragraphs and try to lay out in flat lines just what they mean?

First let’s look again at memory-

Referring back to ‘the flower in the dark. When the question is asked: “What did you see?” that question is itself a drive. The words, hitting your ears, create a search - as the pin in the leg created a search. And as with the pin in the leg, it must be answered. Since we do not have the means, or time, to describe the actions of each of a million neurons connecting every which way, we abbreviate by saying a random search takes place and leads to a connection which settles the drive.

In answering the question, you describe what you did: your physical response to what your senses brought in.You said (you thought) “rose.” But that response can change based on a new piece of history that may enter your world. For instance, you now look at a book of flowers. Based on a picture you see in that book, your structured “memory” of the event is different. You say, and believe… “it was a carnation!”

But the physical response need not be a word.

A dog seeing a tiger's face in that brief light might react with a growl or tremble. A human might respond with a shudder or clenched fist. But without a response there has been no perception. Perception is the response. We have not seen anything unless a response is formed.

The point is- there is no memory storage box hidden somewhere in the grey matter that holds memory. There is only a construction and a reconstruction and a re-reconstruction of your response to the world out there. And this response is ever anew when you come inside and return outside. There is no fundamental. No bedrock. No magic picture. We know the world as an enacted construct. We know the world as our description of the world. We know (are in) the world as the shaping of the moment, in a moment to moment enactment, and ever in the eternal present. (see **REALITY** appendix #5) (at pg 36)

And this function is total and complete. There is no reality outside of this construction. The construction is the reality.

AN EXAMPLE OF ENACTMENT
Blocked by an anesthetic, a pin in the leg shows no pain. But unblocked, the pin connects to neurons and causes random search. The random search leads to a response either by neurons coordinating to pull out the pin, or if that is not possible, for instance if your hands are tied, by a different activity: by "screaming!" or some such response.

What we call pain (recognize as pain) is the enactment, the activity, the trembling without resolving the conflict. Pain is not the random search per se; you do not "feel" the random search: pain is the enactment of that search into a "scream" or some such expressive activity that does not resolve the pain, but answers the search by creating an action. Plainly put, pain is the saying of "ouch!" (Once again this is a brutal simplification, but I believe it abbreviates & describes the main points to understanding).

And once again it is probability that decides. (see **PROBABILITY** appendix 7 (pg. 41)

PRETENCE
We pretend there is certainty. We talk as if there is certainty. We pick a side and stick to it with absolute certainty.

This construction, this way of talking has been necessary to function in the world and has served us well until now.

It has given us agriculture. It has broken the genetic code. It has gotten us to the moon. Will it get us further? What special knowledge must the emerging engineering class have to go to the next step?

I am a Jain. Bob is a dialectic materialist. Sue over there is a Wicker Girl and Jack finds meaning in the entrails of chickens. On Saturday it's Le Chaim. On Sunday -Hallaluliah! What's going on? How can five different people with five different vocabularies get into the same rocket ship and build a community in the stars?

NOTE: the examples cited above are extreme. But not really. It is true that most people in space travel would have at least a rough parity in life-style and education. But all the basic issues in conflict still remain. When does life begin? When does life end? What rules or laws govern us? And who gets to decide? What is the good?

The various disciplines within the University: mathematics, physics, science, religion, the arts, etc., are separately full of content but speak different languages and thus "pass each other like ships in the night"…

Putnam: "*The mathematician in thinking about abstract sets, the musician in thinking about sound, the theologian in thinking about God, all use reordering of the same material." Linkage of Syntax, 10/3/1966, pg. 17.*

By showing that all of our disciplines are abstractions drawn from a common pool of interacting neurons in an ever elaborating nervous system, a path is opened.

How?

Up until about 100 years ago no sane person would allow a stranger in a white mask to cut open his chest, lift out his heart and replace it with a different heart taken from a dead stranger, or even a pig. What change in mind-set had to take place to allow this to happen? What change in attitude or approach?

Science happened. The scientific method. The controlled experiment as a way of getting at truth.

As features describing human anatomy become understood: the blood, the liver, the heart, etc., it becomes possible to redesign, even replace these systems. Redesign meets with resistance at first. But if the science is correct - if it works, we are all for it.

So it is with the brain once it is fully understood. Not to change the brain crudely with a scalpel (although it may come to that), but effectively with the word.

LINKING SYNTAX - REMOVING BLOCKS
Putnam: *"Linking apparently separate bodies of syntax is always terribly difficult. For example, linking the theories of light and electricity (Maxwell); linking the various branches of mathematics in the single conceptual framework of set theory (Hilbert, Russell, Bourbaki, etc.); linking the political rhetoric of Communism and Democracy: or linking the various branches of Christianity, etc. Such linkages involve building an enlarged model that synthesizes the separate, presenting them as special cases of itself, each correct under* certain restricted and distinct *conditions. It is vital to realize that the construction of such a synthesis does not in itself answer many questions.*

What it does do is remove blocks that have been preventing us from asking the right questions. Comments on Eddington, 1962, pg. iii

ASKING THE RIGHT QUESTIONS

We know that a robot can solve the mathematical problems in a chess game better than a human can. But the robot is designed (by a human) to answer only the HOW questions that relate to correct moves in the game. The human player, approaching the chess board carries with him the whole baggage of his body and the whole history of the human race.

By disciplined training, the human chess player pretends to ignore the neuronal tugs on his psyche such as “am I hungry? am I horny? Is it right for me to be representing a political system I don’t respect? Is it moral for me to play?”

Questions of value (what to do and why) are inherent in the human and absent in a robot which has been designed for one specific purpose only - to make the best moves in a chess game. History for the robot starts now.

In the human player, with every move, every decision, a random search starts which covers signals from his body, the outside world, his personal history and amazing as it may seem by extension, the history of the whole of humanity and the pre humanity of living creatures.

The robot has no history. The human has history. The robot has no words. The human has words.

Putnam: *In a sense, the brains of advanced animals are a simplification genetically over the brains of lower animals. In lower animals the CR (Conditioned Reflex) is more nearly an adequate basis of all behavior: sensory stimuli elicit necessary, stereotyped responses. Higher animals are to larger and larger degrees released from the genetically defined dominance of these fixed responses- learning becomes more possible because of the replacement of a rigidly “wired-up” nervous system by a loosely wired-up network of*

defuse random interconnections which interconnections can be, in effect, altered by the CRP. (Conditioned Reflex Principle) A general mode of operation replaces a uniquely wired-up gadget, making possible greater adaptability."

Putnam/Fuller Nervous System Model 1964, pg 8

Putnam: "*Problems (questions) are always problems of what to do. There are no other problems.*

"They arise when there is a conflicting determination of behavior, and it is then the task of a stable verbalization to resolve."

Formulation of Values, 2/16/57 pg. 4 (see **EXISTENCE**, appendix #6 pg. 38)

A stable verbalization.

EXAMPLE THREE: The Word
What is a word? Where does it come from? What does it do for us?

eht tnafni scimim eht s'rehtom spil dna sdnuos

Putnam: "*The word is the spectroscopy of the brain. In its probing it detects the smallest changes in internal wiring."*

Towards a verbal NS Model pg. 12

Putnam: *"By word, we do not mean these marks on paper, or anything heard or felt. It is an existential unit unto itself and carries no meaning unto itself. It is a carrier of position in an abstract linear ordering."* Linkage of Syntax, 1966 pg. 13

What does it do for us?

Putnam: " *The verbal X (contradiction) generates verbal RS's (random searches) that expand the historical niche, till they catch cues or carriers of negation that resolve."* Linkage of Syntax, 1966.

Like a fishing-line whiplashing through the psyche, the word insinuates into every motor correlate, expanding the historical niche. It enables connections that would not otherwise be made. It expands decision and choice, and enables human learning.

Putnam: "*Pantheism sees the external order in nature as deeper than that of the word, so that the best that man can do is adapt to it. The Hebrew position recognizes that the power inherent in the catalytic action of the word is enough to transform the whole face of nature and this many times over, or transcendentally. The best evidence tends to support this view…"*

Putnam Nervous System Model 1963 pg. 44

At birth the infant cannot see, cannot move coherently or think effectively. It has no words. With mimic and practice, skills are incorporated. From simple "ma ma," to all the learning of the world.

Putnam: "*The purely abstract syntactic nature of these invariant carriers of power (words) that shape community life, is an experimental discovery of deepest significance.*

"God is indeed experienced as the word made flesh, the hidden abstract linear ordering of the UM (Universal model)… it is *word descending that resolves and possesses."* Interp. of Syntax pg. 54

Putnam: *"the hard earned wisdom of a few billion years of evolution, which lies at the root of our being, is rapidly being digested into verbal form."* Wheeler/Everett paper pg. 2.

Note: Have you interpreted the opaque hieroglyph (in red) at the beginning of this section? HINT: To disconnect symbol from meaning, for the fun of it, Putnam taught himself to read backwards.

Putnam*: "Scientific methods have led to such verbal self-criticism, that one can roughly say that no preverbal motor correlate is stable any longer, without explicit verbal support."*

Interp. of Syntax 4/11/66 pg. 25

Putnam: *“All of the order of the world which is significant to us, as humans, is a causal emanation of the word. It is a magical catalyst like the chromosome to draw order out of chaos. Remove it and our houses, clothes, dreams are all gone.”*

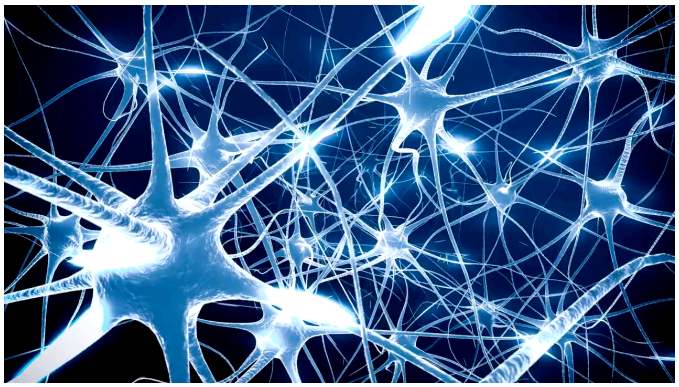
Comments on Eddington 1962 pg. 7

****

RESTATING

Through the course of your gestation, infancy, adulthood and continuing into the present, through the senses, a record of every jot and nuance of the world that you encounter out there is taken inside as neurons that connect. We know, as we know, not as the world out there per say and not as a magical picture of the world out there, but as neurons linking to neurons to produce our words and actions. These words and actions “describe” the world, “create” the world.

What I know is a ‘slot view’ of what has significance to each of us, individually. Consciousness is enacted by our description. And this is called, “reality.”



Since the very beginning of life on earth; since the beginning of the electro/ chemical apparatus that is life, it is random search and probability that establishes our every movement. If you understand how decision is arrived, if you understand the mechanics of how the brain works you have a wider playing field, a broader arena of possibility. And this makes it easier to search for solutions to problems for which no consensus yet exists.

When science finally did arrive, the How and Why were pulled apart, but only for a time. The Marxian ideal for universal brotherhood

originated just when scientific ideas were defining the HOWS completely outside of religion. First for intellectuals, but trickling into every corner of the culture, God was dead. Man alone became the arbiter of good and evil.

But science has come full circle.
How has science come full circle?

Putnam: "The problem of morals was once to predict out or mollify hate, or physical warring interactions. Later as the commercial class displaced the warrior class the models had to predict out greed. Now, morals can ground only if they predict out, or adjust for curiosity.

"The core of the matter lies in the presence of competitive moralities or competitive models for the prediction of the decision process.

"On the one hand, there are crude causal models derived from past concepts of self. On the other hand there are the models of science, but these have been, until now, too ambiguous to be used in the prediction of everyday life decisions.

"When there are two inconsistent models predicting the decision process, they produce deep emotional involvement. Either madness or hypocrisy is the result. And this is what we are seeing now.

"*Hungry terrified men can be organized by simple models but not so a curious well-fed secure educated youth.*

"How to do so, and what it means to try and do so, involves deep issues. It involves building a causal model of brain function, for nothing less can resolve conflicting predictions or orient the verbal function to that degree needed to coordinate the organized curiosity of scientific research." "Putnam NS Model 1963 pg. 4

Putnam: "*Does man have free will? Certainly not in the sense that he can disobey the scientific laws of nature — they govern the workings of his mind and body just as they do inanimate matter, and in this sense he is a machine.*

"However, with respect to man's present knowledge of the laws of nature there remains a certain very special class of acts that he cannot predict, even in principle. These acts are precisely those of emotional, subjective importance." Lecture on Science and Philosophy, #5, 1966, pg. 1

Putnam: *"The great nets of science in sweeping the ocean of subjectivity to try and catch a grounding in life, are drawn in upon themselves by their own laws to reveal precisely nothing. Only God is."* Linkage of Syntax, 1966, pg. 3

REPEATING
At the core of our existence is random selection and probability.

This is a Neo-Renaissance attitude in discovering old truths and discovering old truths based on science - namely, understanding "the self" in neuro-scientific terms.

A quiet and patient understanding of this fact, that life's decisions in science rest on free will in choice. But more than that, in the broadest sense, life's decisions rely on God's choices in probability.

Putnam: "*Each now has to become a self-complete symbolic unit acting alone, penetrating to the causal (verbal) law of the necessity of his own acts, via a personal acting out, to relieve his own personal X (contradiction). The political transformations underway are the outer signs of a religious one, in which the very concept of the self undergoes a radical clarification, by exposing its relation to problem solving of a self-model type. Such problems ever have social roots, and their solution deep social repercussions.*"
Interpretation of Syntax, 1966 pg. 38

Putnam: "*We have only to clarity in the modern research context the old religious functions, wherein their significance is transformed."*
Odd-Ends re Math Dec. 31 1967 pg. 8

****

So walk the walk. Talk the talk. Paint the clouds. Beat the drum and move to the music…… the firmament is sound.

Putnam: *"The conclusion I would suggest… is that the world does not appear to be upside down, or need any reforming. The beautiful song of life flows clearly and sweetly in the good fight up from the deepest past, nor do principles of evolution need revision, nor the "discovery" of "new" for the special conditions of human society, only the recognition of the sufficiency of those that are. There is no sign in history of the irrationality of man, if this is understood in the light of the present doctrine. He does act upon his conceptual understanding of the physical conditions of his interaction with his environment; and this is all we ask of him."* Formulation of Values, 1957

****

Now I would like to describe:

<u>My fifty year relationship with Peter Putnam and the Putnam Papers</u>

I first met Peter Putnam at the phone bank in the basement of the Apollo theatre in New York City in May, 1963. It was finals week at Columbia and I was escaping studying with my friend Al Phillips to see a Fats Domino concert. I left my seat to make an extremely important phone call.

My year and a half affair with a Barnard student, my first and intense, seemed to be coming to an end. This phone call would determine that.

In his autobiography, Max Frankel, married to my friend's older sister, describes his mother-in-law as difficult in the extreme. I was to learn that, first hand, when she took the phone and proceeded to berate me in strongest language yelling never to call that number again - the affair was finished!

Dizzy and nauseous, I turned to see the strange figure of Peter Putnam doing the Putnam two-step and making friends.

At that moment I was in extreme emotional turmoil. In a few words Putnam said he was a post-doc fellow at Columbia. He seemed unusual but really smart and interesting. We agreed to meet for lunch on the campus a few days later.

Note: I believe Putnam's initial interest in me at the phone bank was sexual. Only once in all the years of conversation did he ask if I was interested in homosexual contact. I was not. It was never part of our relationship.

I think Putnam saw in me a student in an emotional crises that pre-artists go through before restructuring and resurfacing. Describing this crises is a major concern of the philosopher Soren Kierkegaard who Putnam was just starting to read at that time. Over the course of that year in our frequent meetings in his office in the Barnard library, Putnam mentored and encouraged me. I stopped going to classes in architecture school except for art and design. Soon into the second year I dropped out, moved to Italy and independent study, to pursue my real interest.

Note: a very few months after the Apollo phone call, a friend showed me a picture in the New York Times of my ex-girlfriend wearing a wedding dress. She apparently married a urology resident, raised a family, and became a professor at Wellesley. A wise choice.

****

Students who would study neurology- before you shuffle off to some tiny corner of the lab to isolate small details of a larger picture, use your intellect to look at the larger picture.

Argument and discussion are ever present in the world outside without considering the world inside. Out there we hear a cacophony of competing points of view, each speaking a different language,

each speaking with an absolute certainty - a certainty our brain does not allow us to have. At the very core of our existence is probability.

Mr Neuroscientist. Stop and examine what you are doing right now. Be self-conscious. You are thinking and making words… and now you are thinking about thinking about making words. And this never stops. "Elephant!" are you now picturing a large animal with a tusk?

Am I rude in suggesting that 'smart you,' everywhere, shares this trait of words: with the pope, the physicist and the pauper under the bridge. The little bit of smartness, you have way on top, is small compared to the vast filagree of interneural pathway that we all share in common from our common history.

It is in the elaboration of these internal patterns that change takes place.

****

After knowing and reading Putnam for several years, and understanding nothing from the writing, I one day seriously asked Peter if his papers made any sense at all, or was it all gibberish. I meant it. Instead of kicking me out of the room for this insult based on my slow mindedness, he patiently said "it makes sense." Another time, he told me that after so many years of listening, I never even once recited a single word of the Putnam model in the language of the Putnam model. It is a feature of my own make up that I understand nothing unless I put it into my own words. But on another occasion Putnam told me I probably understood the meaning of the model better than any of his students.

After he died, over 30 years ago, I continued reading and listening to taped conversations. This paper reflects my understanding of the Putnam Papers, not from a scientist Point-Of-View, but an artist's need and perspective. It's been an adventure.

Putnam: "*The greatest joy in life is the joy of the master craftsman. Discipline is a delightful game… It is something desired, and strongly.*

The intoxication of beautiful form, with its tears and the suspension of life within us, the fruits of simplicity and order, are a driving passion."
Formulation of Values 2/16/57 pg. 42

Putnam: *"…The mature artist was never stopped, in realizing his vision, by technical inadequacy."* Comments on history 1966 pg. 13

I returned from Europe to start filmmaking. I saw a direction but did not at first realize Putnam's influence. Included below are two of many films I've completed under Peter Putnam's influence.

Sonata for Pen Brush and Ruler 1968, 12 minutes
https://youtu.be/AB62OoE-2lo
Returning from study in Europe I was desperate to make a movie and had no money. For 9 dollars I bought 5 bottles of ink and a 400 ft roll of outdated film stock which I rinsed clear of emulsion and fixed to a table lit from underneath. Using tools from architecture school I proceeded to paint pictures on the image track, and next to that, pictures of sound waves on the soundtrack.

Fourteen thousand frames later (eight months), I spooled the film onto a reel and handed it to the projectionist at the Ann Arbor Film Festival in Berkeley. It was received by the audience with great enthusiasm.

Putnam: *"…The mature artist was never stopped, in realizing his vision, by technical inadequacy."*

This is the only sound - picture - narrative film in the history of filmmaking made without ANY use of camera, tape recorder or printer of any sort, hand painted and screened to an audience at a major film festival. Since then many prints have been made. The original stored at MoMA, in NY for many years.

A Day in the Life of Bonnie Consolo 1974, 14 minutes
https://www.youtube.com/watch?v=izJB8hdOLnI
Academy Award nomination. Screened on 60 MINUTES five times.
Putnam: "*the fruits of simplicity and order, are a driving passion."*

****

Note: I believe Putnam's papers are complete as written. But they are all one shot deals. Putnam wrote them down, then moved on to the next. No one helped shape and edit. It will take some smart PhD candidate, probably a physicist much smarter than me, just starting a career, to dig into the Putnam Papers, edit and translate them into a more accesable form.

I fully expect a mob of Neuroscientists will drag me behind the lab and beat hell out of me for my simplistic and cavalier descriptions. But I believe the tide is in Putnam's favor. And his value, not only in his technical model, but in all the implications of this in the various fields, will increasingly be valued.

Barry Spinello
Templeton, CA
2021

****

EXTRA PUTNAM QUOTES AND AFTER THOUGHTS

Putnam: *"The breaking up the chain of past history into pieces brought into parallel and establishing a relative dominance (RD) as among them, is the basic operation of the nervous system."*
Functional Model of the Nervous System, Putnam, 1963, pg. 1

Putnam: "*The basic unit of cohesion is not 'thing' relating space, but an ordered sequence of "decision-like" moments of felt time."*

Putnam: "*The world is built of choice-like operators generating change, (not of things in space)* I Ching paper 1971 pg. 3

Putnam: "*The word, like the chromosome, is a magical catalyst to draw order out of chaos."* Linkage of Syntax pg. 32-33

Putnam: (abbreviated): "*The key isolate in understanding verbal crystallization patterns, is the question and answer procedure itself (or dialectic as Hegel called it)."* Interp. of Syntax pg. 21

Putnam: "…*the past and future only exist for us as part of the indexing of the (eternal) present."* Functional form of the *Life Game. 1968 pg. 20*

Putnam: " *Thought is ultimately a property of the environment, or class of correlations fed into the brain itself. Were there not these latent harmonies in the data, the brain's organization would rapidly fall apart, (as is in fact seen, when bodies are subject to "sensory deprivation).*

SPECIAL BRAIN AREAS
*Putnam: "There is a vast body of evidence pointing to the uniform functional character of all areas of the brain." (*see Joaquin Fuster, writing 20 and 40 years later*)*

Putnam: "Areas differ only in the parameters of this common function, as for example time constants, and ratio of cells of different "type", and in the areas linked by the wires that come and go, etc. The uniform functional character of all areas force us to look to the structure of the environment, or the inputs themselves, as the source stabilizing internal structure.

"*Special brain centers do not represent a violation of this simple picture. Rather they reflect the correlated nature of the environmental inputs, and their breakup into such classes for special processing. "Certain centers are concerned with turning, rising, etc. Certain areas are concerned with spreading the final output rhythms to catch special coordinational regulation once the act is "decided" on (the cerebellum)"* Putnam/Fuller NS Model 1964 pg. 35

GAME THEORY - Gefter description:
“Putnam believed that the best mathematical tool for his nervous system model came from game theory. In game theoretic terms, each motor behavior is a “move,” and the goal function - the aim of each move, and the overall object of the game - is to repeat, to find “the self repeating path” in the tree of possible moves. If a neural network or larger sensorimotor loop can self-excite and repeat without getting inhibited out by parallel processes, it will, by Hebb’s rule become easier to use in the future, thus creating a learned behavioral heuristic. Putnam calls this a “common goal function” because everyone in “the game” - other neural networks, even other people - share the same aim. It is this commonality that joins people in a shared system, because the very same process that takes place in one brain - the process of parallel competition, contradiction, and the establishment of a relative dominance or a new, contradiction-free sensorimotor loop that can repeat - can likewise occur between people.” ….Amanda Gefter, 2021

MATHEMATICS AND GAME THEORY IN THE PUTNAM MODEL-
Coleman Clarke’s long but excellent description:

“*Putnam is saying that all of life, including the cosmic evolution of the universe as setting the preconditions for life, can be viewed as a grand mathematical solving process with all of its many and various sub-problems. In so far as modern cosmologists and astro-physicists apply mathematics to the understanding of the origins and development of the universe, that is a major example. And earlier Gallileo, Kepler, Tycho, Brahe, and Newton applied mathematics to the understanding of the planetary motion of the planets around the sun, and we still use Newton’s mathematical laws of motion (i.e., via his mathematical calculus) to send space ships to the moon, to Mars, and to other planets. Einstein’s work qualifies and extends Newton’s work to the mathematical calculation of the trajectories of objects moving at the extremes of the speed of light, and to the ultra small scale of the inner workings of atomic particles, of which Newton had no notion.*

More relevantly, as applied to the life process, mathematics has been extended to the study of organic chemistry, biology, psychology, neurophysiology, sociology, and essentially, especially with Putnam's One Person Game Theory, to the whole of the life process.

So when Putnam says that Dedekind said that "God made the numbers and man made everything else", what he means is that the whole field of pre-existing, God-given, discoverable, possible orderings of numbers exists in the abstract sense, to be drawn upon and used to apply to the understanding of this process and that process in the world by human beings, and what human beings do in physics and all the sciences is the application of mathematics to all of the processes they study. When they successfully apply mathematics to the study of a given process, they thereby come to know that process and it comes into being as a concrete part of human knowledge of the world, whereas before, it was not known to the world of man. So in a technical sense, by applying mathematics and coming to understand a specific process of the world that was not known or understood before, man has taken part in the making or creating of the known world by capturing it with applied mathematics.

Think of Helen Keller, here. Before Helen Keller acquired language, there was a world "out there", but it was unknown to Helen Keller. Helen Keller had no concept of a "world". When her teacher began to teach her language, and at the point where she suddenly realized that the signing that the teacher was doing in her hand symbolized water, she simultaneously realized that there was a whole symbolic "world" out there of which she had no knowledge, and she eagerly began her quest to know the "world" by asking her teacher what is the symbol for this and what is the symbol for that. In so far as she was applying the ordering of words to the ordering of the world around her, she was engaged in a process of applying a game theoretical branch of mathematics to the understanding of the life and the "world" and all of the objects and processes in it, began to come into being for her.

Just as the world came into being for Helen Keller in this way, so did it come into being for primitive man as he began to assign symbols and words to things and processes, down to the present day when we apply highly complex mathematical analysis to ever-increasing and expanding areas or domains of the life process to the point where mathematics is taking in or being applied to the whole of the life process.

The comment about Augustine saying that God is a moving number is an attempt to capture or sum up the same idea of the dynamic creation of the universal life process in terms of the ever-changing relationships involved in the life process. True, Augustine was no enlightened or modern day mathematician, like Dedekind was, but he had a Hebrew sense of the meaning of number understood in the before and after counting process, not in the Greek, spatial, geometric sense, but in the Hebrew temporal sense of counting the days until God delivers the Jews from Egypt in the Exodus, the number of days that the people wandered in the wilderness, etc. In a deeply Hebrew sense of the numbering of the days of man and of a journey and of the days of the Lord, the God of Israel with his people in this event and that, one can understand that Augustine could say that God was a moving number, and it could turn out to be a more profound statement than Augustine himself could know.

In this context it becomes much easier to understand what Putnam means by the "notion that God is a universal that can ingress everywhere and everywhere is the same, and that these appear to have transcendental roots". Putnam's view is that the world is an embodiment of universals in at least two senses. The first is that the objects and processes we find existing in the world, exist because they embody and manifest the workings, ultimately, of the universals of the laws of physics. The universals of atomic and sub-atomic physics reveal the the composition of matter. Newton's laws are embodied or manifest in the orbiting of the planets around the sun, etc. For Putnam the fundamental laws of physics are the most basic universals out of which the universe is built up, or "compounded", as he likes to say. Then, chemistry, biology, neuroscience, psychology,

sociology, etc., up to and including ethics or the "Value Problem" are all treated as problems in applied physics.

When he says these universals can ingress everywhere, he means that the laws of physics apply everywhere in the universe, not just, say, locally, on earth. And when he says they are everywhere the same, he means that the laws of physics are not different on a distant planetary system than they are in our solar system, as the cosmologists and astro-physicists have confirmed in their studies. It could be that matter behaves one way on earth, and a completely different way on a distant planet belonging to another star system. But that has been found not to be true. It could be that the biochemical and neurophysiological that govern the behavior of apes, chimpanzees, and orangutangs are very different than the laws that govern human behavior, but they are not.

So by "universals" Putnam means laws, or principles, or codes, like the laws of physics, or the principles of mathematics, or the genetic code, which lies at the basis of all carbon based life as we know it, and is another example of what Putnam means by the "notion that God is a universal that can ingress everywhere and is everywhere the same, and that these appear to have transcendental roots".
…Coleman Clarke, 2006

****

(appendix #1
A NOTE about Putnam

Peter Putnam was from a wealthy Cleveland family. But he believed it was immoral to use money you didn't earn by your own hand so he shunned the family fortune. Over the years he helped his mother give it away.

When Mildred Putnam died in 1984, the remaining 3 million went to Peter, her sole surviving heir. Following a life long practice, Putnam never touched a penny of it for his

Peter Putnam in Leiden, 1956.
(Photograph by Alison Lahnston.)

own use. Instead, just for the fun of it, (and I think to show that he could), he invested in stock. Sitting at his rickety kitchen table in the Houma, Louisiana ghetto, he scanned the stock pages in the NY Times and phoned in changes. Over the next three years, before he died, Putnam increased the 3 million to 37 million.

In 1987, riding his bike on his way to his night watchman job, Putnam was killed by a drunk driver. He left the entire 37 million dollars to the Nature Conservancy. Putnam chose to live as a pauper.
The above is cited only to show the unusual circumstances of Peter Putnam's life. For more on his life see the Princeton Alumni obituary at peterputnam.org

(appendix #2)
SUPERSTITION
PUTNAM: "Convention wears a double face.Truth, love, loyalty, honor, all that we most value in ourselves and others, are things fought for, slowly won, and preserved in ritual from one generation to the next. But these rituals, that represent the highest ideal, also represent the worst lie. (hypocrisy) The new first emerges not as satisfaction of these ideals, but as a contradiction in them. It emerges as hate.

Faced with the existing contradiction in existing rituals, the temptation is to view the contradiction at first not as problem but as mystery (superstition), not as error to be fought out, but as paradox to be revered and accepted.

But this choice is, of course, no choice, since to delay is but to increase the pressures forcing a turning into the contradiction.

But with it's solution, (with an understanding of "the self" in neuroscientific terms), we return to the very rituals that we were forced to reject at first, and now they wear a very different face, symbolizing the highest ideal. After a man has been through suffering, on the other side, when he returns with a task needing implementation (a purpose in life), then the very rituals which first

appeared as a mask of hypocrisy and lie, emerge as the avenues to a greater simplicity and accuracy of expression. They then feel at no point burden, but rather a needed means to economy and openness."

(appendix #3)
FULLER interview
Berkeley, 2011
This videotaped interview describes Robert Fuller's relationship to Putnam.

(appendix # 4)
IDEALISM born to despair
PUTNAM: "*The idealist is born to despair. Because he has divorced his values from power, from the concrete conditions of interaction. If such a foundation for values were to mean we would in practice lose our great cherished gains of freedom, I too should be suspicious, but quite the opposite is the case. It is people who know how to fight and organize in a practical sense who alone keeps it and those who view "freedom" as a schoolbook wonder based on an abstract argument of the good never quite argue down their masters and turn to hate."*
Formulation of Values.1957 pg. 7
(Barry: And turn to coercion and force, in trying to implement their "ideal" or idealistic vision on humanity)

(appendix #5)
REALITY
Consider this: Bob is a human being standing in a well-lit room. His eyes focus on John standing across the room. Light bouncing off

John's body travels across the room into Bob's eyes. This information is processed and channels into Bob's brain as a drive.

A random search takes place across Bob's brain. Neurons from his history correlate with incoming neurons from the eye. Hebbian connections are made, a threshold is reached, muscles are engaged, and an act is formed. The act is formulated in the brain but enacted in the room. Bob's face breaks into a smile.

John "sees" this.

In reverse, light from Bob*'s* smiley face focuses across the room, into John's eyes and channels into his brain. John's history is randomly searched over and correlations are made. By Hebb's rule the relevent muscles are engaged.

But John has a very different history than Bob. A different catalog of listed events. So John's reaction is different than Bob's. Instead of a smile, John's muscles contract to produce a shout: "You owe me 20 bucks, you creep!"

We have just seen reality formed in the room. This is a microcosm of all reality in the world. All of life acts and reacts in this way. Mostly through eye, but through the other senses as well. What comes in is shaped and returned, shaped and returned. And this is total.

Every culture has a way of describing the process of reality. In a variety of styles, unique to each culture, a hero is formed: Buddha, Krishna, Isis, Odin, Fuxi, Yahweh, Huitzilopochtli. Many names for many Gods. Our culture has such an identity. We call it science.

We really are puppets pulled by the strings of our psyche. Cut the strings and the limbs fall limp. The "God" idea is embedded in the psyche pulling strings. Probability. God is in the numbers, as has been said.

(appendix 6)

EXISTENCE

Aetheists think about God. They talk about God. “God” is present in their awareness. And in this sense they believe in God. But when asked, they say: “I *don’t believe in God’s existance*.” What do they mean by existance? What does it mean to exist?

What follows is perhaps the most contentious of Putnam’s ideas…

PUTNAM’S TAPED INTERVIEW

(*The following conversation is based on voice conversations Barry Spinello (BJS) taped with Putnam in Houma, Louisiana, in 1987. The full recording, approximately 25 hours in length, will be available on request*)

*PP: “The theme here is that you can’t project structure. The structure we know is really at a technological level and not objective. The structure we know is the structure of the ordering of emission of our behaviors (enacted) and we can’t assign (*realize*) this structure in an absolute way out there at all. It doesn’t exist outside of your creating it.*

BJS: *Well then, what is out there???*

PP: *A way of talking. An exageration. Since it is impossible to describe a million neurons connecting every which way, of neccesity we fall back on the old language. We pretend.*

BJS: Well, does out there exist or doesn’t it exist?

PP: What does it matter if you say Barry Spinello exists or you say Barry Spinello doesn’t exist? Unless you can give me some way to falsify the distinction who cares? Use either word you please, which ever one suits your fancy.

BJS: Well, as a problem it exists, in as far as it bothers people. To contemplate that out there doesn’t exist rightly seems to bother people.

PP: Well, I would prefer to use the word existence. But a meaningful distinction is a distinction that is falsifiable and insofar as it isn’t then it’s not meaningful. You’re Barry Spinello all the same. Well, similarly it doesn’t

make much difference whether or not you say God exists as long as you can commune with him.

BJS: Commune with God?

PP: The same as it doesn't matter whether or not Barry Spinello exists so long as you know you're aware of him and…

BJS: Aware of God?

*PP: I think the best way to get this is in a Buberian sense. First of all the relationship to the world is an I/other relationship because it's a question of combining your heuristics (*fundamental rules of living*) with the heuristics of other people. The struggle to do so first appears as one of choosing which people to choose to believe because it looks as though they all have different points of view that can't be reconciled, but as you integrate them into your drama shop and get at the interior subjectivity that motivated the other person saying those words, which are overstated and can't be reconciled with the other guy's words, you discover that really there isn't that big of fight between them as you thought at first and you discover that all these verbalizations can be combined and the relationship between yourself and these many others which constitutes the inner dream world is the God relationship precisely because they can be made part of a common system.*

So you experience your relationship of yourself to the deeper self which involves a synthesis of these many sub-selves as a relationship to a single personality, and that personality is the person of history, (Christ is the western tradition) as Augustine says.

So your relationship is a relationship of yourself, to yourself inside yourself which involves a relationship of yourself to the synthesis of many voices. So, what you're constantly doing is struggling to achieve a synthesis of these many voices, which is a struggling to get into contact with a deeper self which is hidden somewhere in the realms of possibility inside yourself and contains the answers, which is experienced as a highly personal relationship and that's why we call it God rather than calling it nature or something else because it is even more personal than your relationship with another person.

BJS: Uh-huh.

PP: So you think of prayer as a struggle to achieve an inner synthesis with yourself, which is ultimately a union with God. I mean, a union with the objectivity which resolves all these overstatements.

And that's exactly what's happening now. In the past it oriented in relationship to things in space. We now orient to in respect to a tree in exponentialy opening possibilities. It's a catyclismic jump from one self-model to another. Science has at last pushed to a point where it creates it's own self-model and when it does you have a new heroic age, which is what we are having, a new simplification in a grand sense, in a grand historic sense.

NOTE: An extensive dialogue with Putnam took place over a seven day period in Putnam's ghetto apartment in 1987. It was my intention to go back a year or two later and videotape. But Putnam died before that could happen. I listened to the tapes actively over a several year period and they are a prime route to understanding Putnam. I hope to have them available on line soon.

Barry Spinello, March, 2023 (item in progress)

<u>BEGININGS</u>

Putnam: *"One starts in a sort of Garden of Eden, with no separating cell walls, and little purification of types. It is one cooperative soup, able to support a duplication of nucleic-like compound, without any special pre-formation of protein catalysts. What reproduces fastest wins, and what is fastest may be different in different regions.*

From: General Purpose Heuristic (GPH) April 15, 1978 pg. 52

Putnam: *"Beginnings were doubtless more chance dependent than other times, but the laws of physics as the laws of survival remain the same."* GPH pg. 41

Putnam: *"The chemicals (amino acids) that now root the basis of life are among the most easily produced under prebiotic conditions! A special code appears to have early evolved to control and stabilize the replicating part of the process. All of future history was then the refinement and discoveries of possibilities on this code."* GPH pg. 36

Putnam: *"Building a machine to get the materials needed to get the free energy to build a machine to get the…etc. under varying ecological conditions is the essence of the life form."* GPH pg.34

Putnam: *“Once well started (i.e., now) life has plenty to go on. There is lots of energy out there we can use, and lots of material, once technology reaches an already predictable level not far ahead.”* GPH pg.73

Barry: For two to three billion years elements floated unconnected in the primordial soup. Over time they learned how to join together forming DNA chains. They enclosed these inside a surrounding skin. And once inside life started until now.

Putnam: *“One might say that a latent tautological unity was present in the Garden of Eden stage before cell walls. It is never again reformed till, via the NS, (nervous system) and the word, it is recreated at the verbal level. It is only via the word that the ”projection out” of isolated systems, completed by cell walls, is taken into account, and the many heuristic systems thus generated reunited in a common system. Only the word pushes on to universals absolute enough to be reconected across these gulfs. Imitation, pushed on by the word, finally transcends our dependence on the genetic code, and has now started reading that code’s content into words.”* GPH pg. 68

God help us!

****

The basketball is seen speeding through the air. Hands, feet, eyes, fingers coordinate to catch the ball, jump and shoot. The ball sinks the basket thirty feet way. Have we just witnessed a miracle? Or have we seen something as predictable as a trilobite morphing into a bonobo? Or a stegosaurus into a neuroscientist? Let’s break this down and try to see just what we have in this amazing thing called life.

(appendix # 7)
PROBABILITY
The infant moves one finger or one toe and attaches that move to another finger or toe-move until a coordinated group of movements is

achieved and we say - the child has learned to grasp, the child has learned to walk.

Extend this now to 10 years later. The child is moving and acting in the world quite smoothly. Her basic twitches which are at the root of each smooth move, are submerged and coordinated into what we call: “normal activity.”

And so it is with all of life. We get up in the morning, eat breakfast, drive to work, drive home, eat again, sleep again. We can think of this as one smooth continuous chain of activity. Adjustments are of course made: such as nudging the steering wheel this way or that, brushing the top teeth first, then the bottom, flushing the toilet. But these are “local” activities, well defined and limited.

Global activity is different.

Putnam: *“Models of a global character are different than those concerned with simple phenomenon… The global view is a chaos of insane contradiction and overstatement, as each subgoal tries to force generalizations… The practical issue of global synthesis is the integration of the endless ends”* (see Comments on the Nervous System, October XI, 1978, pgs 1-4)

Imagine a student in emotional breakdown.

Putnam: “*To plead for friendship. to be self restrained, to be angry, to be subservient, to be able to assume and give expression to all such attitudes, does not lead to chaos. Accepting this broader sympathy makes the resolving as between them susceptable to verbal regulation.”* Formulation of Values, 2/16/1957 pg 16

Barry: What this means is within the drama shop of yourself, be able to step back and sort out and categorize the edge of your feelings - how you are acting or behaving at this very moment…

—‘Ha! Now I am the Buddha of anger! - and now of remorse! - and now of joy!, etc. etc.’

Remove yourself to a slight distance and be able to see and evaluate yourself in action. See that within yourself you have the many tendencies, and knowing this you can see which you are using and when. You are thus not at the edge of, or run by, or led by your tendencies or immediate feelings.

Knowledge of this, or about this, is gained by experience in living, but also by understanding the model (how the brain works) and this is an aid in developing the skills and patterns in life's game.

The "model" provides insight into self for those struggling for identity.

A FANTASY

At every junction Techies pray for guidence.