

LINKWITZ LAB

Sensible Recording and Rendering of Acoustic Scenes



... but you want to design your own loudspeaker?

My conversations with Fitz

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... your own loudspeaker?

... come into my parlor ...

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.... come into my parlor said the spider

The Creation

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Fitz: So here I am.
And what is this spider and parlor thing all about?

SL: Well, it's actually a little detour from our talk about acoustics and hearing. But not really, because I came up to the point were I need to explain the Association Model of Hearing and what the German word 'Gestalt' actually means. That forced me to think about how perception of sound works and what it really is.

Fitz: Sounds interesting, but now that you have thought about it can we just continue with acoustics and hearing?

SL: We could, but I would like to make a few points, so that our conversation about hearing will flow more easily later on.

Fitz: Sounds reasonable.

SL: Let me tell you a story to illustrate the points that I want to make. It actually happened this morning here at our Sea Pine Cottage on the Pacific coast of northern California.

My wife, Eike, had just come into the house and told me that she had seen again the mama deer and her baby slowly strolling through the high grass of the meadow, that is between our house and the ocean. I looked out the window and saw them too as they moved in the direction they normally take. Their trail continues across the street and between houses to a hedge row of huge trees. Those are buffers against the strong northwesterly winds and they show it in their bend.

Anyways, a little later when Eike looked out the window, she said: "Look across the street, by the houses, mama deer has laid down and is resting. I can see her ears sticking up."

I looked, but could not identify a deer, even though she pointed out what she saw. So I said: "It's an illusion. Go up on the balcony. The binoculars are upstairs." So she did, but not without saying: "The deer may have moved away in the meantime."

Well it did. What she saw through the binoculars in large were two stems of a bush across the street from us, that had formed the image of a deer's head with ears pointing up in her mind. And that was particularly so, because she was so interested in the mama and the baby and where they might have gone after she had seen them in the meadow.

Fitz: So what's the point of your little story?

SL: There are actually four points. They relate to that part of the story, which begins with Eike perceiving a deer in the outdoors scenery, the Gestalt formed by meadow, bushes, street, houses, windbreak trees, etc., which she sees as she looks out the window.

She perceives a resting deer, or more accurately, the Gestalt of a resting deer has caught her attention. She associates what she sees with her memory of the mama deer and baby, which had drawn her attention earlier.

This could have been the end of her interest in her deer story. But she is not certain about her observation. So she makes a move to bring me into her story, by asking me to look and to confirm what she sees. I suggest that she move to the balcony upstairs and take the binoculars.

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She goes to the balcony, looks through the binoculars and recognizes that she saw stems of a bush forming the image of a deer's head with ears pointing up.

Fitz: And the four points?

SL: Between the objective Gestalt and its recognition there is a subjective process, which starts with perception of the Gestalt, followed by attention to detail in the objective Gestalt, which may be caused by movement of a detail in the overall Gestalt or by a movement of the observer either physically or mentally. A movement is always relative to something. It represents a change in perspective.

Finally by comparing the observation to memories of similar observations and memorized Gestalts, the Gestalt is recognized.

Fitz: So the process is:

Objective Gestalt >>>>> **perception, attention, movement --> recognition** of Gestalt.

SL: Yes, and the recognized Gestalt is always **subjective**.

And then there is the utmost importance of movement. Neuro-scientists ask why do we have a brain? Their answer is: to move the body in its physical environment, which is needed for survival of the body. A tree does not need a brain. Everything is programmed in. Everything is built for survival at least long enough to have procreated. Otherwise that life form will go extinct.

Fitz: I can see why we can endlessly argue about the sound of some piece of audio equipment. What we hear is always subjective and totally influenced by the associations that we bring to the observation, or which associations are evoked by an acoustic event and which have turned it into a sonic event.

SL: It goes even further. I or a clever marketing person can suggest what you will hear and you will have a hard time not to hear what we suggested. Or if some product has a particular reputation you are likely to find that reputation to be true. The more so the more often you have read about it. It is difficult to stay open like the child, who did not see 'the emperor's new clothes'.

Fitz: Good. Now I go back to your 'Introduction to Acoustics and Hearing' by clicking [2-](#) of above.

SL: Sure, I just felt that I needed to point out to you and readers of our conversation, that the Association Model of Hearing triggered a lot of thoughts about time, space and life in me. All my life I was searching for answers to 'Why was I born in Germany and at that time?' and 'What am I supposed to do' and 'Who am I?' Life has treated me well. Of course there have been ups and downs, but I feel very lucky.

A lot fell into place as I started to make visuals for the Association Model.

Associations just came to me with great excitement and I had to put them down graphically to illustrate the Gestalt. Think about the pictures below when you feel interested or are on a search for meaning in life. There is some good stuff here.

Fitz (relieved): OK. For now I will navigate to one of the topics above.

SL: Just in case that you do come back, here are explanations of the terms and symbols that I used in the picture of LOVE below. You might print out [picture file 3](#), which was my map to the Dance of Life, to focus your attention.

<p>$G_U(t, e, m, i)$ means that the Gestalt of the Universe U is associated with time t, energy e, mass m and information i. $i_U(G)$ means that a specific information-instruction set is assigned by G to universe U</p>		
<p>GUNIVERSE</p> <p>$G_U(\dots)$ = Gestalt of the Universe we live in, the backdrop to life c = the speed of light, which is a specific constant of universe U $c = 300,000$ kilometers per second $e = mc^2$ = the discovery by Einstein how energy and mass, time and space are tied together t = time, what is it really? Our view into Memory(G) ? The movement of Creation? $i_x = Fe^{kx} t$ describes the growth or decay of information i_x in time t $e = 2.71\dots$ is a natural constant for exponential growth. It is not energy</p>	<p>GALL</p> <p>$F = "The Force", "Angels", assistants to G$ $e = mc^2 = i_x(G)$ means a specific information set for universe U_x, which implies the existence of other universes, for example U_y, programmed with completely different instruction sets</p>	<p>G</p> <p>$G = "The Source", "The Creator of All that Is"$ $SL(G) =$ We are invited to observe the creation through our five senses, to process, to learn, to create memory, to move, to do and to participate</p>

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GUNIVERSE

$G_U(\dots)$ = Gestalt of the Universe we live in, the backdrop to life
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 $i_x = Fe^{kt}$ describes the growth or decay of information i_x in time t
 $e = 2.71\dots$ is a natural constant for exponential growth. It is not energy e in this formula
F = a proportionality factor for growth or decay
L = Location, a property of space

GALL

F = "The Force", "Angels", assistants to G
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G

G = "The Source", "The Creator of All that Is"

SL(G) = We are invited to observe the creation through our five senses, to process, to learn, to create memory, to move, to do and to participate

G creates G_{ALL}

$G_{SL}(G_U, G_A, G)$ means that the above is SL's Recognition of the Gestalt of (G_U, G_A, G)
It does not imply that this is how it really is, or that this is IT
It is merely SL(G) recognizing

SL: A funny thing happened this morning. Eike woke up at the crack of dawn, got up, took the binoculars and went to the window to look at the bush, which had formed yesterday the image of mama deer resting. And she said: "It's not as clear today. But also the fog is in and there are no shadows." I had to laugh and said: "You had an apparition yesterday! Whole religions are started that way!"

SL(G): Nothing wrong with that. It can lead to Recognition(G).

SL: Here now in symbolic language is the story of SL's journey to recognizing SL(G):



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LOVE

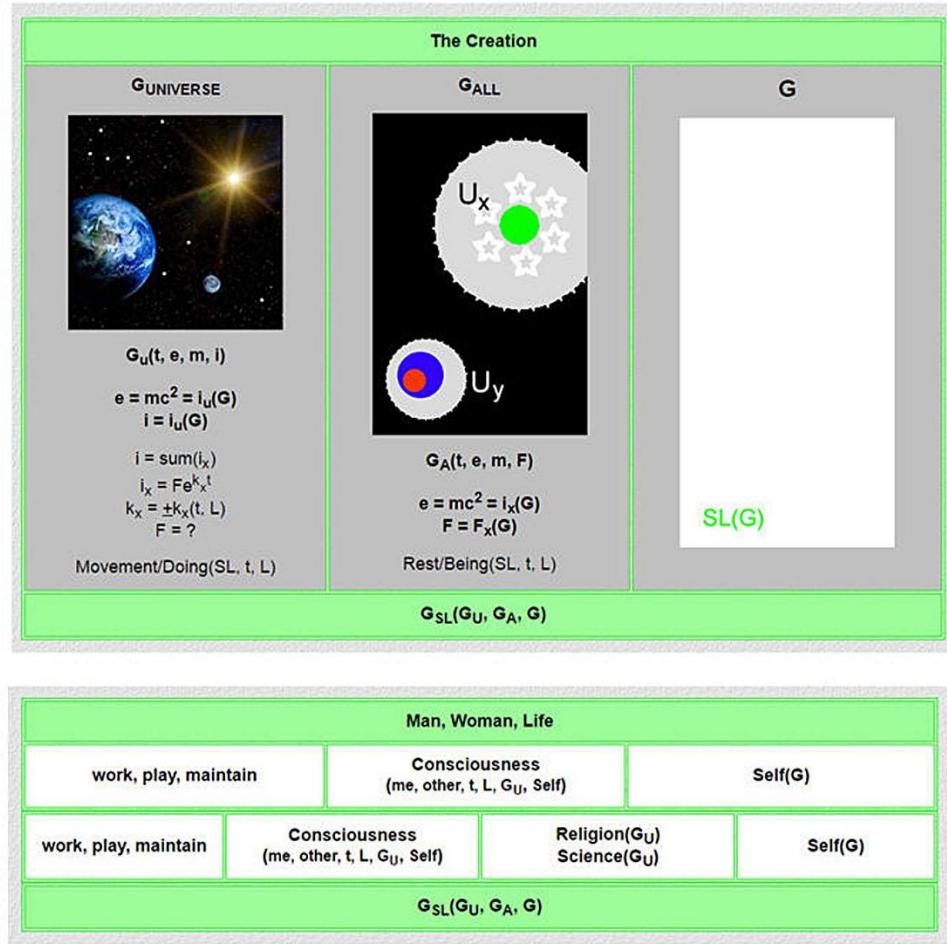
The Creation

GUNIVERSE

GALL

G

LOVE



***** ||| *****

[LOVE as picture file 1](#)

[G_{SL}\(G_U, G_A, G\) as picture file 2](#)

[My map to the Dance of Life picture file 3](#)

[Journey picture file 4](#)

Vianna Stibal, "Theta Healing", Hay House, 2010

Cesar Hidalgo, "Why Information Grows", Basic Books, 2015

Cesar Hidalgo, "Why Information Grows", Basic Books, 2015

James V. Stone, "Information Theory", Sebtel Press, 2015

Tony Parsons, "The Open Secret", 1995, 2011

Karl Renz, "Das Buch Karl", 2004, (in English: "The Myth of Enlightenment")

Karl Renz, "A Little Bit of Nothingness", 2012, (in German: "Tao Te Karl")

Michael S. Gazzaniga, "Who's in Charge?", 2011

Barry Blessler & Linda-Ruth Salter, "Spaces speak, are you listening?", 2007

Aldous Huxley, "Island", 1962

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9 Information As Nature's Currency

9.7. A Very Short History of Information Theory

Even the most gifted scientist cannot command an original theory out of thin air. Just as Einstein could not have devised his theories of relativity if he had no knowledge of Newton's work, so Shannon could not have created information theory if he had no knowledge of the work of Boltzmann (1875) and Gibbs (1902) on thermodynamic entropy, Wiener (1927) on signal processing, Nyquist (1928) on sampling theory, or Hartley (1928) on information transmission⁴⁰.

Even though Shannon was not alone in trying to solve one of the key scientific problems of his time (i.e. how to define and measure information), he was alone in being able to produce a complete mathematical theory of information: a theory that might otherwise have taken decades to construct. In effect, Shannon single-handedly accelerated the rate of scientific progress, and it is entirely possible that, without his contribution, we would still be treating information as if it were some ill-defined vital fluid.

9.8. Summary

In 1986, the physicist John Wheeler said:

It is my opinion that everything must be based on a simple idea. And ... this idea, once we have finally discovered it, will be so compelling, so beautiful, that we will say to one another, yes, how could it have been any different?

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So compelling, and so beautiful: information theory represents a fundamental insight that must surely rank as a candidate for Wheeler's "simple idea". Indeed, after many years of studying physics and information theory, Wheeler came up with a proposal which is both radical and intriguing:

... the universe is made of information; matter and energy are only incidental.

Insofar as it must be made of something, a universe in which all forms of energy and matter are simply different manifestations of pure information might be as sublime as this one.

From: James V Stone, "Information Theory", Sebtel Press, 2015

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**In the Valley of Elah
Like Sunday, Like Rain
Forrest Gump
Everybody loves Raymond
The Red Piano**

***** ||| *****

**There is a crack in everything,
that's how the light gets in**

***** ||| *****

***** ||| *****

.... may Light and Love and Power restore the plan on earth



Message received and understood !

May Peace return to Earth

***** ||| *****

***** ||| *****

SL: May Peace return to Earth

I take these words as the current marching order for mankind. Too many of us have meandered way off track in their journey through life. In animal and plant kingdoms there is balance and infinite differentiation. There is grouping according to (e, m, i, L) for survival and evolution of each species. There is dependency upon the environment and other species. There is fight and there is peace. Rarely is there surrender of one group to another and domination. No one wins at the expense of all. Not for long.

In man, creation has accelerated. We perceive creation through openings in our skin or pressure sensitive areas of the skin. The eyes look out. The ears sense variations in ambient air pressure at the eardrum. The finger tips sense resistance to touch. The nose detects aroma molecules. The mouth senses taste. The five senses are transducers, which send signals to the brain. The brain and its associated memory have evolved to analyze sensory inputs, to evaluate them, to make decisions. The resulting actions are: hide, flee, fight, relax and accommodate. All five entail movement of the body and are instincts. It is through our senses that we experience the world and respond to it. But we also have a 'story teller' in our cranium, which has learned to comment on our actions, to approve or disapprove and to be curious about this world, that begins on the outside of the skin.

It is the curiosity about the place we find ourselves in after birth and the longing for love and comfort, that we had been exposed to in the womb, which soon makes us go on the journey. The goal for the journey is to recognize The Creator of All That Is, to recognize that all that is outside of our skin, and all that is inside of our skin is Creation. Creation equals Love. We live in a dualistic universe: Inside - Outside, Up - Down, Front - Back, Left - Right and a surface below. We can move in that universe and explore its properties. That's where brain and memory come in.

Now we all have teachers to help with that process, starting with Mother. She conveys love and nurturing. The love we came from and which we will continue to seek until we die as we go through life. We may find experiences and express love in the act of union, in the joining of sperm and egg, ecstasy and relaxation, to create a cell of new life. Everybody started as a single cell and was in that state for thirty minutes before the cell began to divide.

Being taught can give us a sense of growing security on one hand or inadequacy and fear on the other. Many carry fear with them until they die. It is a package for the journey and needs to be conquered to give and to find peace.

It seems there are too many backpacks loaded with fear and inadequacy instead of love and joy on people's backs. The 'story teller' in the cranium finds many means to cover up fear. The self wants protection. Money, aggression and procrastination are often used as a shield, but not the answer in the long run and lead to disillusionment. Love is.

LOVE

Life is about living. Life is to be lived to discover the mystery of creation, which is hidden in plain view.

Life is about love, to give, to find and the me dying again and again to be at peace.

Creation celebrates Creation through Me

**Creation may grant me to die before death, to be cognizant of Creation,
to be liberated, yet bound in the body**

GRACE

SL: And what is Time?

It appears that time is the binder, which binds energy with mass, information and location in space.

t<e, m, i, L>

Time and Creation are one and the same. They are just different labels, i.e. words, for it.

Time and Creation come out of love **LOVE**.

Creation is continuous. It has neither beginning nor end.

Cause and Effect are one and the same. There is only **Creation**.

The Big Bang is a memory in creation.

The rock which the astronaut brought back from the moon is a memory of creation time.

We live in continuous moments of creation.

'Continuous moments' is a contradiction in itself, since our perceptual apparatus and scientific tools cannot have a bandwidth greater than defined by the speed of light.

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We perceive the moment as the dividing line between past and future

We chop up time to comprehend it and to function

The timing of events is a great mystery

Time is the great mystery

SL: The past is a memory to us. It tends to change and fade in our brain. So we materialize it by taking photos, videos or writing things down to last longer. But eventually those too will have turned to dust.

Now the amazing thing is that Creation's Memory is still all there for us to discover right now. Lumped masses, energies, information and locations are the trail of creation as it marches on. We can access them at this very moment like we do in a random access computer memory or when we google, except in 3D.

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Peace on Earth