

# Silica - Substance and Process | New Alchemy

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*In the beginning was the Word and the Word was with God, and the Word was God.* That short sentence – the first sentence in the gospel of St. John – very accurately describes what we've been studying for the past few days. If we wish to enter into the idea of what silica is in a richer way, it helps to have a sense of what these words mean, and what relevance they might have to silica. First of all, the sentence doesn't say, in the beginning was God. It says in the beginning was the Word, and then the Word was with God, and then it was God. What that implies is that at one time, there was a Word, a sound, a gesture before there actually was the God of that gesture. It was a Word, it was a sound but the sound, the word was prior to the manifestation. The sounding was before there was the actual event. In Goethean science, Goethe had characterized that motion that John had described as the polarity between Being and its Manifestation. Goethe felt that the Being of something existed in a supersensible, archetypal state as a pattern, or as a form, as a quality, as a condition, that exists a priori. And that those qualities and conditions eventually would lead through form to matter. Goethe talked about Being beginning to manifest but not quite manifesting yet. That in the Being phase, what he called Being, there was no manifestation, only potential, vast potential. And that's what St. John was saying. In the beginning was the Word, and then the Word slowly was with God, and then it was God.

The motion from the Being to the manifestation is what very often causes confusion in biodynamics with regard to substances. Because substances are the manifestation of a condition of Beingness. They are not in themselves Beings, but substances are the corpses of beings. There is a polarity there, between what has manifest as a substance and what is potential (in potentia) in the cosmos, as a Being, which is going to make an appearance. And that potential Steiner has characterized in many places as the difference between the process and the substance. The process is equivalent to the Being. It is the nonmanifest. It is a silica process that is not silicic acid, silicon, any of those. It is an archetypal, supersensible, cosmic potential for silica, silicon, silicates, to actually manifest. It is useful to us, very important when we begin to see these differences between something as a substance and something as a process.

Recently I've read about some experiments where scientists were working with gravity. They were experimenting with iron. And they found that iron, one of the densest metals, had a very strong specific gravity. (We could say it is a very much incarnated substance.) But as they started working with very sensitive instruments to

determine its mass and to try to find out how quickly it would fall, they found that there was something that would cause iron to fall slower than other metals. This seemed to contradict many theories of standard science. They were not anthroposophical scientists, yet they were staring straight in the face of what Rudolf Steiner characterized as levity. Because of the density of the iron, because of the force of the contraction of the iron, there was a counterforce implicit in the iron itself that was filled with light. It was radiating outwards as opposed to the contraction of the mass and the density of the physical substance. There was something in the physical substance that was not part of their calculations. There was something else, which they called "The fifth force," or "the unknown force." Some day they will have a name for it, but at present it's a mystery. That's a perfect example of the polarity between substance and process. Iron as a substance has great density, weight and mass. But as a process, iron is expansive, filled with light and levity.

Those of you familiar with anthroposophical medicine know that this is a picture of what happens when iron is given to people. Their blood begins to fill with the light of their own Ego. They begin to experience the force of this light. Regular science is on the edge of these discoveries. Thank the Lord they're putting these things on a pragmatic basis. But Steiner had another way of doing things, and so we, in biodynamics, benefit from that. We can call the unknown force levity. We can say, yes, levity as a force exists.

The important point is that this is an example of a polarity between a substance and a process. If we look at silica, we notice that it has been characterized in many ways during the past couple of days. We've heard it characterized often as a substance and often as a process. And if that has started swimming in your head now, there's a good reason. There are lots of things to describe. It's an incredible material. It has so many aspects that are so far reaching in nature's household! When Mr. Grotzke began with that whole list of things, that was just beginning to scratch the surface. He could have gone on and on, I'm sure, in describing the characteristics of this substance and process.

If we look at silica as a substance, there's a certain connection in silica to viscous states. A colloidal state such as sodium silicate reveals the tendency for silica to have a connection to water, which at first seems very strange. As a substance silica appears to be insoluble. Yet we talk about making soluble substances and solutions of a substance that basically appears to be insoluble. And that's a bit of a paradox.

Well, here's a picture from the world of optics. If you have a lens from a telescope made in 1600, and you look through that telescope today, you're not going to see

much because the lens has slumped at the bottom. It sort of gets a little middle-aged spread. Opticians call this slumping. The lens material itself migrates, due to gravity, to the bottom of the tube. Now at Stanford they noticed this and they came up with the idea that silica is really a colloid. But they said that we see it as a solid substance simply because of our finite time frame. This means that if we were to have the far slower time frame of an elemental being, we would see the windowpane slowly ooze onto the floor. By shifting to their time frame, we could have the experience that the duration of human physical space offers a time experience to a being whose encounter with matter is rooted in a direct perception of the cosmos. From this viewpoint we would be able to feel that this solid substance here is slowly migrating and moving. I've even heard that people have described that the pyramids were built due to the proto-softness of the rock at that time which could be enhanced by a certain operation involving oxalic acid. Michael Jost yesterday mentioned oxalic acid in his workshop and my ears perked up. Researchers conclude that oxalic acid was somehow tuned with sound, with words and sound, to make the silica go back into its colloidal gel state. And then it was just dumped into forms. This is why you can't fit a knife between the cracks in the walls at Macchu Piccu. Because it was really a colloid that the ancients dumped in and then it set up. They understood that the time frame of silica was a different time frame. So, in that time frame of the silica, it wishes to exist in the form of a colloid. A colloid is a very unique thing. A colloid is a mineral that can be imagined as having inclinations towards being a plant. It has a yearning. And at one time, if it's given the right conditions, it begins to move into a picture of plant nature and can start "growing." People that work with crystals know that crystals grow out of the mother liquid. They grow like little seeds in a womb. Much of the terminology of crystallography sounds very much like obstetrics. So here is a gesture of something that's connecting these two and that which is connecting silica and birthing is that they represent the Word, the Light, before it really is manifest. This is a picture of silica as a process. A silica process is involved with colloids, and mucous, and light processes. A substance (as Gunther Hack said last night) is a dying away. And as substance then, we have to do funny things to it. We have to screw down on it to get it to enliven, in order to get the piezoelectric effects and things like this. In order to run radios and apparatus out of it. It is possible to do prismatic experiments with it, because it still has some of that light left in it. The light that's left in it is an echo of the tremendous light, incredible light that was there, when it was in potentia in the cosmos. But now it's fallen and exists merely as an echo, a mirror of that light. But it's caught in a time frame where even as a crystal it is still in connection with the fluid, creative cosmos. Even as a dead corpse, silica carries the gesture of the creative potential of the cosmos.

If we can move it from its centered crystal form back to the periphery again, and we start to get it to participate with the water, if we get it back into a solution, it begins to be sensitive to life and forms colloids. It has this sentience, it's sensitive, it's a sensitive thing. You've heard that, I'm sure, at times, too.

Now, that sensitivity arises because it comes from the cosmos as an "Idea." And then as it starts raying in, it has a tendency to form sheaths or planes of light. And the planes of light begin acting in, on, and around the earth where the earth is receiving the cosmos from all directions. The earth is more or less imbedded in these sheaths of light, which is formed in our atmosphere in the ozone layer. That's where our light is really formed. The interaction of solar particles on the ozone layer gives us light.

Light is like an enchanted envelope around us. It is like a placental sheath. And in that placental sheath, that's where the life is, where it's held and nurtured, in that cosmic sheath. The water in the air nurtures the life in the light. Now at one time, that was the primary mode. Steiner talks about it as Lemuria. That's how the whole earth was -- one continuous light-water-air sheath imbedded in warmth. Well, I can't think of a better description of a colloid. If you disturb a colloid and you take the water away, the colloid turns back into a rock. If you give it the water, it moves back into a fluid and can support life. That's what a colloid is. It keeps going back and forth. You throw a little salt in, it dies. A colloid sits on the boundary between substance and process. Therefore, it has a tendency to form edges, because it will expand a little bit, and then it sort of dries out a little bit and goes back. It leaves a little impression there, we could say. The light leaves a little impression. An analog of this edge-forming process can be seen in the world in a humble way in the dishes of color used by watercolor artists.

Put a little dish out with some water and add some color. Later when you go to look at it, it has 18, 19, 20 different little rings in it. It doesn't just all dry up and leave a flat film. There is always a number of delicate, clean edges. Always. As organisms we are permeated by these rhythms. That is also a silica process. A delicate water and air-light process surrounded and permeated by warmth. This cosmic delicate process has a tendency to form edges and membranes, and so if you look at a crystal, as crystallographers know, you can often see these little phantoms in there of just the way that crystal grew. Because in the crystal are all these little membranes that have been frozen and trapped by time. That's where we get the piezoelectric effect, from the tension in all the little membranes. (When pressure is applied to quartz, electric current is produced – Ed.) Membranes are sensitive, sensitivity is akin to life. So that life quality, the sentience, the sensitivity of the silica, comes from the fact that it has origins in this great sheath of light that we have around the planet and that is now start-

ing to condense into a substance.

Granite originates as a colloid, be it magma or porphyry. Whatever the chemistry, it is structurally a colloid. As that substance begins settling out in a pluton – a mass of rock under the earth – it starts to organize itself into various levels, somewhat like a living organism. It never quite gets there, but somewhere in the universe it has an "ego." So in the pluton you'll find various layers, the heavy material naturally falls down to the bottom. This might stay as a colloid for thousands of years, and slowly the iron compounds settle out and go down, and then the finer, lighter parts go up. You'll always find fine crystals up in the top, the rock milk, as they call it. The rock milk floats to the top, and, there in the fine colloids, crystals form. The granite forms in the middle of the mass. The heavier gabbros and the deeper darker rocks, basalt and pyroxene, form in the bottom of the pluton. So with crystals of fine materials at the top, granite in the middle and darker iron-bearing minerals in the bottom, it's as if this rock were beginning to resemble an organism. You have the heavy metabolic things down below and the little crystals up above. Even within each family of rocks there is an organization. For instance, the granite family develops in three directions. In granite you have quartz, mica, and feldspar. They're all silicates. Silica is silicon/quartz/flint/silicic acid. Mica is a silicate that's very rich in potassium and other plant-related salts. And feldspar is a silicate that's rich in sodium and calcium. These all come out of granite. Those are all silicates and they all go in different directions. The quartz silica has the upper hand in the granite, and when it weathers out, you get sandstone. When feldspar weathers out, if it completely weathers out and everything is released in the minerals, there is a tendency toward limestone because weathering creates a feldspar that can be picked up by an animal. When feldspar weathers out of the rock, it eventually ends up in the shells of animals. The middle one is mica; this weathers out into a very interesting material that connects silica to feldspar – clay.

When you look at mica, it has little leaves in it, little books. Mica's structure resembles little books of leaves. And the little leaves are pictures of a time when the whole physical-mineral matter of the earth was imbedded through and through with plant potential. Steiner calls this stage the "world-mineral plant." And when the world-mineral plant was in the evolutionary stage, the plants and the minerals were physically woven into one another. That's what Mr. Grotzke described the other night, when the big plants were forming and they formed silica in the bottom of the sea. During this phase of evolution there was a rhythmic going in and out of these states because it was all basically a colloid, and whether it was a mineral or a plant was unimportant. The life forms of earth were breathing that way.

The clay that we have today is a memory of that. It's a memory of the time when it could become a plant or could then turn into a mineral. When we take this plastic material and make a face out of it and put it in the kiln and bake it, then it's there for a long while. And yet, a day before it was plastic. And you could take it internally and it would heal you. So there are still memories of that time in the clay. Now the clay is a very interesting component of this process because clay is a silicate, it has silica in it. It has a silicate, or silica, in a relationship to alumina. Alumina is an unusual substance. Scientists call it an amphoteric. This means that whatever is unbalanced in one way will be balanced by the other side. An amphoteric can be both basic and acidic. It can mediate between two minerals that melt at widely differing temperatures, and it will bring them together so that they melt at the same temperature. It has incredible properties, this alumina, and it is abundant in nature. When nature puts the alumina together with silica, combining the plant quality from the mica together with that flexibility of the alumina, the result is a material that can relate to all poles in nature. It can relate to the silica pole, it can relate to the lime pole, it can do miracles of combination, because it has this incredible balance. Clay is a cosmopolitan silicate.

Clay is connected to the plant world, through the weathering of the mica, but it also has deep connections to the animal-like feldspar because the feldspars are what potters use to make glazes on pots. Just dig them out of the ground and put them on the raw clay and that is your glaze. So there is in this a hidden kind of alchemy in granite. The granite begins dividing and dividing, but it's basically always silica. And so silica as a manifest substance always terminates a silica process. Silica processes, as they form the colloids and granites from the periphery, start to move into substance, and become, as Goethe called it, protean. Proteus was a Greek god whose strategy, when he was fighting someone, was to be a shape-shifter. Proteus was a shape-shifter. If he was fighting a beast, he'd turn into a bird; they would turn into a hawk, he would become a fish. Every time there was a problem for him, when his enemies shifted shape, he would change into something else. Every time an enemy tried to grab Proteus, he would change into something else. If you changed into something else to fight him, then he would change into something else that would get you. Very clever, that Proteus. Goethe called granite the proteus of the mineral world, and we find that the middle member of the granite, the clay, has shape-shifting capacities in abundance.

The clay is the real connection that interests us as gardeners and farmers, because the clay builds what is known as the clay-humus complex. The clay-humus complex is a unique alchemy that is produced because the clay's already moving in that direction, it's already colloidal, it already has affinities to water, it already has connections to a

lot of different areas in nature's household. Clay begins combining with acids from dead things and from organic matter, and starts to form not just clay, it starts to form other colloids. And these other colloids are the type of material in which a plant can find nutrition. In other words, a plant can find what it needs. A plant has a difficult time dealing with just the rock. It doesn't have a lot of capabilities. Some pine trees do pretty well, you know. They'll find a crack and go ahead and grow. But most plants need some type of mediator between the rock, the mineral, and their own plant nature. That's where the clay/humus serves the plant world.

Clay is a rock that already has leanings towards becoming a colloid. That's its history, its pedigree, so to speak, to carry this silica process, which starts to become plant-like, as the clay-humus complex. And then the plant finds in the humus and clay, structures and substances that it can relate to. Now that sets up a unique situation. Because, as we start to move into this level of silica and silicates and silica process, there are some very amazing mysteries. The clay has the tendency to form what chemists call the kaolin ring. If you look at it chemically, and look at the behavior that all silicates have in common, this kaolin ring is their field mark. Their field mark is that their molecular structure is in a ring, a kaolin ring. The kaolin in the clay supports this growth structure. If you look in nature's household for other materials and substances that have that molecular ring, you find that kaolin/clay is like touchstone. "Touchstone" in, *As You Like It*, by Shakespeare, is a fool. He has everybody connecting with everybody else. Kaolin is a mineral touchstone. And its written formulation depicts those forces. It has a lot of valences, and it can build molecules in all different directions.

Another touchstone in chemistry is the benzene ring, a very famous ring in chemistry. Benzene is great at taking everything apart. Take any carbohydrate – oil, wax, fat, resin – and benzene is used by chemists to dissolve it. It's a great chemical touchstone for dissolving organic compounds, and it's a ring. Here we have two ring structures in chemistry that bridge the mineral inorganic and the plant or animal nature in the organic.

Still another famous ring in chemistry – also a touchstone – is the protein ring. And in amino acid formulas, where people are working with amino acids, the simpler ones are in long chains. But when you get to the kind of rare ones that support light and sentience, and act in certain very critical areas in organic chemistry, they always form a ring. So we've gone from granite, and we're starting to touch very interesting territory in which we can see common gestures in the kaolin ring and the protein ring. The similarity which all of these substances are beginning to represent here, these ring structures, which function in connecting and dissolving – that's where we can

finally begin now to describe the difference between silica as a process and silica as a substance.

If we look at when chemists tell us about the periodic table, the arrangement of the elements in the physical world, the periodic table is basically like a musical score. It's made up of elements arranged molecularly in rhythmic waves. The waves are arranged so that silica and carbon are octaves of one another; one substance is harmonically related to another. The carbon touchstone connects and builds organic compounds at one level. The silica touchstone connects and builds compounds at the level of the octave of carbon. They are in the same group but they are one wave apart. Between them are nitrogen and oxygen, the building blocks. So if this was drawn as a wave there would be carbon at the bottom, rising through nitrogen and oxygen and forming organic compounds, and then at the same spot but at a higher vibration there we would find silica – in the same spot but another wave up.

Now that means an inner kind of harmonic resonance between silica and carbon. They share something with one another. And the thing they share is the fact that where one process reaches its zero point and it's totally activated, right where it stops, that's where the other one shows as substance. And that's why it's really difficult to understand silica as a process and silica as a substance. By not differentiating, we contribute to the confusing of things. Because we never really clearly say we're talking about silica as a substance or as a process, Rudolf Steiner doesn't often either. So I guess it's not necessary. Perhaps there are expressions in the German to do that? I don't know. But alchemically, they're worlds apart. Because, in the medical lectures Rudolf Steiner makes a very interesting point. He says, homeopathically, if you take silica and you potentize it, and you keep potentizing it until you have lost all of the substance in your potentizing, when you've lost the substance, you're just left with the agent, the force. That point is the zero point. If you keep potentizing, further – surprise, surprise – what comes up is, in its effect, calcium. When the substance leaves off, then you have a calcium process . . . it acts like calcium. Silica acts like calcium when you get it potentized to the null point.

And he says even further, if you keep potentizing, it gets to the null point again on the negative side and flips back into the first substance, only at a more potent level. Now, we're talking about some pretty slippery characters here. They're going in and out the door all the time. So the way he describes it is very interesting. He describes it in a picture. He says, if you're a millionaire, you had a million dollars and you start spending your million, you just keep spending and you reach a null point. But you keep spending. We all know that one! We keep spending . . . and you are still engaged in the same process that is spending, but now your status has changed. You



are now a debtor, but you keep on spending. This is a picture of a substance that has been potentized to the null point. It is still the same substance only its effects are the opposite. Like the modern concepts of deficit spending or establishing a line of credit, something has changed but we don't have a conscious grasp of the change because we are still engaged in business as usual. Much in modern life is filled with this alchemy.

So here we have a substance being carried through a process. And when we do homeopathy, we take a substance into the world of process. And we start to move it in a direction, and then all of a sudden, because we process the substance, it flips on us. And it turns into something else. And then it looks like that for a while, and then we keep the process going and then it flips back again. But it's an octave, so we might not even recognize it. We might not recognize that silica is an harmonic of carbon. But if you really talk to a chemist who is really familiar with the periodic table, he may say it's all the same stuff, it's just vibrating at different frequencies. It's all the same stuff, but it's different. Appears to us to be different, but it's really all the same stuff.

So that is a delimma when we come to communicating about silica because the language won't support what we really need.

The characterization of the silica process is that it's active at the periphery. It's only active at the periphery. It comes in from the cosmos and then begins to operate at the edge there in the ozone or wherever, it begins to form sheaths, begins to form layers at the periphery. It's active at the periphery. So if you read Rudolf Steiner's course for doctors, he recommends that if a child has the measles and they won't erupt, give him silica and it will drive the disease out of the body from the center outwards. But we just heard that silica is coming in from the periphery, from the cosmos, and it's creating sheaths out at the periphery. And then first thing Rudolf Steiner does, after he tells us that, is to say, well, give silica and it will drive things from the center of the body out. And I don't know about you, but that sounds a little contradictory. Very paradoxical. But if you look at it and reflect on the very appropriate picture he gives us out of the debtor, we may find an answer . . . If we have the silica process from the outside and that's moving inward, it tends to form a skin. And so the process often results in skin or membrane. So that those couple of grams of silica found in the body, I would imagine if you took all the membranes, took all the sheaths of all the organs and all the membranes, and all the nerves, and all of the sheath material around our eyes, and all that, and you put that together, that's where all your silica would be. The rest of it is the calcium side. Silica would be found in that space where you were sensitive, and that would be on the edge of things. It could be in the body,

it could be the pleura around the lungs . . . the membrane around your heart, the pericardial membrane. It could be that, it could be on the very inside of your body, but it would still be a peripheral silica process, a coming in from the outside. So reversing the silica process, which comes from the outside and forms the skin, is the connection by which Rudolf Steiner told us to work with the substance silica if a child had measles that wouldn't erupt. In this treatment you take silica as a substance, and silica as a substance exhibits the characteristics of calcium as a process. This calcium as a process, its characteristic is that it rays out. When you apply silica as a substance it rays out like calcium as a process. So you see what we're dealing with here. It's a lemniscate. And as you keep trying to take the poles into the poles, it gets a little difficult, admittedly, but it doesn't mean that it's not reasonable. It's very reasonable, you just have to remain the patient and, as Gunther Hack said, don't jump to any conclusions. Adopt an attitude like, whatever happens, let's wait and see.

I must say that I have been deeply impressed by the sharing attitude of the leaders of the workshops that I attended in not trying to just say, "This is my conclusion, this is the way it is." In Michael Jost's workshop yesterday there were two men that had done an incredible amount of research and have their own opinions, but they both exhibited that Goethean quality of listening to the other. This attitude is really what it takes to move into this area of mysteries – not think that you understand it! If you think you understand it completely, it's very difficult to perceive other possible views.

Yesterday, when we were working with the clay, what we did was look at polarities in the deer and the cow. We looked at the antler and the horn. We saw that the horn was a product of the silica process from the outside. Coming from the outside and laying silica as a substance down on the horn from the outside. And all the cosmic substantiality then brings an incredible eruption of all the calcium digestive fire there in the cow, on the inside. The deer, having an incredible surge of calcium in the life of the blood, not the nerves and skin, but the blood, the blood drives out and then forms bone, and then it's very sensitive to the silica process in the cosmos. That's what we use its radiations for, to pull that in and to bring that into the bladder. So that horn and the antler are poles in that way. A very interesting book along the lines of this is Karl Konig's *Earth and Man*.

If we look at these polarities in the horsetail, for instance, the horsetail is about 97 percent silica. This gives horsetail a rigid quality, but if we look at it as a being or process it is the opposite. Hugh Williams told us yesterday, that horsetail has a softening, moisturizing quality. It doesn't physically look like something soft and moist. It looks like something that's hard and dry, and in fact it is physically hard and dry, as a

substance. But as a process, it's incredibly powerful in its calcium radiation. And in its moisturizing and softening, dispersing, Steiner says that calcium, the carbonic acid process in humans, is dissolving like calcium carbonate. So here's a plant as König puts it, this plant is so tender with . . . or so greedy with, the calcium process, it puts on this coat of silica to help deal with it. And then we use the silica, and we say, yes, it's a silica gesture. We have to learn to look at it from both ways.

This is a drawing of a seaweed. The seaweed is known for its fine potassium content. We look at it and say, yes, that's kind of a calcium-potassium gesture. But then we learned yesterday that this seaweed is in the presence of all that silica. How can that be? Well, if you've ever swum around in a kelp bed, there's a layering of mucous-colloids going on in that kelp bed, you know, it's kind of a scary place. With sticky sliding membranes and life passing through there. Kelp sperms and eggs are all floating around in the water with the kelp. It's all very obstetric. The quality of seaweed is very much on the silica side, with membranes and sensitivity. And yet the plant itself, in its substance, is calcium rich. It brings that gesture to the fore in response to the silica forces in its environment.

This idea of silica as a process and substance is just the corner of the rug. Once we begin really looking at everything from this point of view, we can see that a tremendous horizon of possibilities for healing and medical agents arises – especially for the type of work that Hugh Courtney is doing with the preparations. These thoughts point to the incredible alchemical activity that takes place in biodynamics. But we make a mistake when we first are not clear about what we're really trying to describe to others, and we make a mistake when we draw premature conclusions about what we thought we heard. I hope that if we have a feeling from this gathering that it was a lot of information, well, that's natural. And if you heard contradictions, that's also natural. That's part of what it takes to deal with biodynamics. It's fraught with apparent contradictions. If we can take our consciousness to a slightly higher level and begin to think Goetheanistically, then we can allow the polarities to move one into each other and can respect what we hear coming from the mouth of the other. If we can do this, then there is vast potential for realizing that Rudolf Steiner's impulse towards a renewal of agriculture, through biodynamics, becomes a possibility.