

ENTROPY AND THE CRONE

Exploring the Physics and Metaphysics Of Evolving Systems

Jane Whitson, who was trained as an engineer, and Jeffrey Joel, a mathematician, teamed up with Ann Kreilkamp, publisher of the Crone Chronicles, to trialogue on the nature of entropy, and its relationship, if any, to the archetype of the Crone. None of the three had any idea what would become of this croneversation when they began it, and decided just to let the ideas fly. What follows is an edited transcript of a 90-minute discussion.

Ann Kreilkamp: This discussion comes about because of a synchronicity . . . About two weeks ago, on the same day but at different times, I witnessed both of you talking about entropy — not to each other, but to other people — and each of you had a view of entropy that I’d never heard before. My understanding of entropy had been “a system that’s running down,” “something that’s ending.” This strikes me as being connected to the word “crone,” especially in the way we normally think of crone, as the final stage of the life cycle of the human female. Then I heard Jeff talk about entropy as a “correction,” “bringing a system back into harmony.” Even more surprising, Jane spoke of entropy as “compassion, universal love”!

So Jane and Jeff, let's begin. Let out all the stops. How can the words "entropy" and "crone," and the ideas behind them, fertilize each other? First, the etymology of the word. Jeff?

Jeffrey Joel: Well, the word was coined by Clausius, in the study of thermodynamics in the mid-19th century. He was studying the properties of heat, and noticed a tendency in systems to "even out" the total amount of energy. And he called that "entropy," which came from the Greek: "en" means "in" or "into" and "tropos," which means "turning towards," or "transforming towards."

Jane Whitson: In physics, my first understanding of the word "entropy" was, "going from more concentrated energy forms to less concentrated and more diffuse."

Jeff: In physics, one usually thinks of having a lot of particles moving around in a system — those particles will eventually cancel each other out in some way, making the system more homogeneous. And that's the kind of process that goes on in reaching equilibrium. The question I have, is: what does equilibrium mean? For example, is the universe *ever* in equilibrium — except for creation.

Ann: *Before* it was created, you mean?

Jeff: Yes. One possible theory is that the only time the universe was in equilibrium, was just prior to the Big Bang. Ever since then it has been getting further and further from equilibrium. And so all the states we usually think of are states which are very far from this equilibrium.

Ann: What is a “state” in physics?

Jeff: A “state,” in this context, is a cross-section of everything that’s happening in the universe at a given instant in time.

Ann: If the whole thing is always going out of equilibrium, then where’s the entropy?

Jeff: We need to distinguish between the universe as a whole, and different parts within it. The solar system, for example, is a part which is in equilibrium, but the universe as a whole is going further away from equilibrium. A state which is far from equilibrium tries to get back toward equilibrium — this is the process of entropy. But as you get some sort of perturbation (in thermodynamics, one calls this “work”) affecting the system, it will usually put it further away from the state of equilibrium.

Jane: Yes, that’s what I sense. In thermodynamics, there are a couple of laws. One of them is “All energy goes toward entropy.” Is that correct? It’s a one-way trip.

Jeff: Yes, it's a one-way trip toward equilibrium for any part of the universe which is in form. Eventually it will tend toward letting go of that form, towards greater entropy.

Jane: What that tells me, in metaphysics, is that all energy is going one way — toward home.

Ann: It reminds me of the astrological sign Pisces, the end of the zodiacal cycle, where all forms dissolve and everything merges with everything else; there is no differentiation any more between one thing and another. And that is bliss, nirvana. Home. So is there a difference between entropy and that?

Jeff: I think there's a difference. Entropy is a process. It's not a state. It's a process that states undergo.

Ann: A process of going in one direction, of increasing letting go?

Jane: Yes. I think of entropy as both a process and a state. To me, we're talking about physics and metaphysics. My experience with metaphysics came only after my experience with physics, and somehow, on an intuitive level, I found them to be similar. On an emotional level, we go from passion to compassion, and the compassion is the entropy state. And we get to it by altering our energy

system through various emotional releases. Does that make sense?

Jeff: For a physicist, the process of entropy is of release of order, or increasing disorder.

Ann: Connecting that to metaphysics or psychology – a process of releasing patterns?

Jeff: Pattern is order.

Ann: We use the word “patterns” in psychology. We’re talking about how to make the connection between physics and metaphysics – since metaphysics is more obviously relevant to Crone.

Jane: My understanding of the physics is that energy comes in different frequencies. We have thought. We have light. Light lowered, slowed down in energy, is electromagnetic, and then the denser forms of that are physical energy, potential energy, such as coal, uranium. Then, as you reverse the process, go from dense, more concentrated energy to less concentrated energy, that is entropy. Ultimately that concentrated energy form dissipates into total entropy.

Ann: OK, so as the frequency changes, it transforms to become lower, denser, more concentrated.

Jeff: The process of becoming matter is the process of imposing order on something.

Jane: You could say that we've already gone through that evolutionary process.

Ann: Or *devolutionary* process, going *down* into matter . . .

Jane: Right, right. And we can see it through the way energy and matter have formed. Now, through the entropic process, we turn around, go back towards light . . .

Ann: . . . transforming into higher frequencies now, becoming less and less concentrated, letting go of form . . .

Jane: . . . going towards less concentrated physical, emotional and mental patterns. And that says to me that we go from passion, which is concentrated — when we can only love or be happy with certain forms and as we let go of those, grieve them, we become more compassionate. We become more universal in the ways that we can love and be loved and find fulfillment. We move from personal to transpersonal. From individual to collective. Does that make sense?

Jeff: I would say it's a combination of things. It's not purely metaphysical. There's also an evolution that occurs on a

planetary level. And I think what's important to know is how we humans as beings living on this planet are affecting that overall evolution. We're like little fluctuations; but the fluctuations are big enough to affect the whole process.

Ann: So *we* are the perturbations that cause disequilibrium?

Jeff: Yes. And I said, let's assume that before creation, there was an original state of equilibrium. The system keeps getting further and further out of equilibrium. When that happens things like chaotic processes occur, where things look totally random. You have no way of predicting what's going to happen next.

Ann: This drives scientists nuts. They want to predict and control.

Jeff: That's true. Their understanding of the universe takes them to places they personally don't want to go. . . . When you jump from one state to another, you have no idea what that next state will be. In some sense you should be able to predict it, but you can't. And so as a result, currently we have all these different theories, and we're living in the middle of this state, very far from equilibrium but we think that where we are *is* in equilibrium. And so that's what has happened physically, and that is interacting with the metaphysical process.

Ann: OK. So how does chaos theory fit into the devolutionary/evolutionary process we talked about earlier?

Jeff: I think that's part of what everybody has to do right now — find out how to connect them. Popular books are written on this subject, or which talk about this subject, but not always very precisely from a physics point of view.

I'll just keep using the systems analogy, because it's easier for me to think that way — so stop me if it's not clear. We humans are at a sort of turning point, this little plateau we're on, where we can keep pushing the system further away from equilibrium, which could push the behavior into something truly random. I mean, at some point, given enough perturbations, the system will “jump” to a new level. And we cannot predict when that will be or what it will look like. What would it mean for the earth, or the solar system, to jump? Polar shift? Destruction of life? We have no way of knowing.

Ann: Are you saying we're doing that because of technology, industrialization, what we've done to our world, or are you talking about something that would be happening without us?

Jeff: I think that if we were not here, there might be something happening, but the system itself would probably be more stable. We're here and we're really changing the system radically. It's very localized. . .

Ann: . . . to this earth, you mean.

Jeff: Yes, but the whole point of chaos theory, is that some sort of local disturbance can have very major effects elsewhere, because each moment a new system is starting.

Ann: As in life. Remember Fritz Perls? "Each moment is the beginning of your life" . . . Well, how to put all this together?

Jane: First of all, what Jeff said is that the energy system that we live in has many many levels – physical, electromagnetic or emotional, mental, spiritual – and they are all connected. Therefore, a shift in energy of any one part of the system is going to slightly alter the energy of the whole. In other words, if one person raises their energy, or a weather pattern changes in one place, it's going to affect the energy elsewhere. For instance, El Nino, off the west coast of South America, has major impact on the weather patterns all over the world. . . As a female, I want to get back to an experiential level, away from the theoretical. I'll leave that to Jeff . . .

Ann: Well, let's put them together. That's the point. You can take this position within the dialectic of those two because each one is informing the other. Go ahead . . .

Jane: Experientially, when my own physical energy system, my own life, got unbalanced . . . I experienced it as a random act which threw my life into chaos. It was on the emotional level that I started going back, feeling like I was going back home. It was a process of going through years of emotional release. I was letting off very concentrated energy and thought forms and patterns. I couldn't bypass that. I couldn't go to thought, and just say, I'm going to be different, without going through the emotional, or the electromagnetic release . . .

Jeff: Metaphysically, you had to transform the most ordered part first. People's patterns are orders. And so those are what need to be transformed.

Ann: Why does that have to transform first? Or is that even a question?

Jeff: The process of entropy is a process of increasing disorder. Or it's a state of disorder.

Jane: And it's the disorder of the old system. We think of entropy only in terms of disorder. The dictionary says, "energy not available to do work." But if we shift our

perspective a little, it may mean “energy not available to do work in the old order, the old patterns.” That doesn’t mean that that energy is not available for other kinds, for transformational work.

Ann: Or maybe the energy is being used to transform, to let go of the old patterns. How does that strike you?

Jeff: I think traditionally, the “disorder” occurs as “potential energy” in physics.

Ann: You call it potential energy if it’s not doing work?

Jeff: The energy in a system is divided into two kinds: potential and kinetic. Kinetic energy is the part that’s used for work. So, for example, the kinetic energy of gasoline is the part that’s actually used in carburation. And the part that remains as potential energy is the part that goes out the exhaust pipe. So the part that’s entropic is the part that remains potential energy always.

Ann: So it’s the waste. It’s “wasted energy.”

Jane: What we *think* of as waste.

Ann: We think of it as wasted energy because we didn’t use it for work!

Jane: For the kind of work we think we need. But who's to say, as Jeff said, it's still considered potential energy, but it's just not in the same form and it's not available for the same kind of work anymore. Just as when we transform our lives, we can't go back. We don't have the energy for old patterns, old relationships. But as we go toward entropy, we do have energy available — for different kinds of work and different kinds of lives.

Jeff: When we undergo emotional catharsis, for example, there's always energy released, energy that has been held as a kind of potential.

Ann: Held, in form.

Jeff: Yes, and not necessarily physical form.

Ann: And it's released, and so, in the old model we would say "it's wasted"!

Jane: But if we talk about transformation . . . for instance, my anger was held in for many years, by thought forms, by lifestyle forms, that at some point were triggered into a chaotic type of unravelling. And as I released my anger appropriately — I say appropriately, because when I release it inappropriately, it keeps me dug in — as I released my anger appropriately, my energy was no longer available for

the same old things, only for the beginnings of new things – on physical, emotional, mental and the spiritual levels.

Ann: OK. So this may give us some kind of a connection between chaos theory . . .

Jane: . . . and the chaos we're feeling in our lives.

Ann: On the other hand, there's always order underneath any apparent chaos in physics. Right?

Jeff: Right.

Ann: Which is the same case here. There's always order. What's happening is a variation on some pattern . . .

Jeff: We can't see it yet because we're still seeing with old eyes. But in that transformed state, ultimately we will see a new order. . . We don't know what the actual order is. We only perceive it at some remove, because we're perceiving our experiences.

There's a theory about black holes. A black hole is a place where energy collects, and is held in by gravity.

Ann: Kind of like our patterns. They keep on collecting energy, these dark black holes in ourselves.

Jeff: The reason it's called a black hole is because no light can escape. But there are also theories – Hawking, for one, thinks this – that around the fringes of black holes there's thermodynamic activity, little fluctuations of light around the outside that come in and go out. What's interesting here is that the process of gravitational attraction, which we usually think of as irreversible, is perhaps reversible.

Ann: So what does that mean?

Jeff: I don't know. It just seems like it's relevant.

Ann: Like that's the creative realm, somehow . . .

Jeff: Yes. It's those edges that are the important parts, not the dark part or the rest of it, but the edges that are important. The space between. The exchange of light and dark.

Ann: it's the same way in environmentalism. They talk about the edges between two ecosystems . . . that's where things are dynamic. So what does that have to do with Crone. How can we put that back into Crone?

Jane: Well, let's talk about menopause . . .

Ann: Oh, good . . .

Jane: Because menopause is something I'm familiar with. And what I'm finding is that my old form of being female is being transformed, like it or not. It is being transformed on the physical, the emotional, the mental, and the spiritual levels. And I'm finding that transformation to be a very emotional process, not just a physical one. I find myself grieving over old thought forms. The way I see myself as a woman is changing. The way I relate to myself in the world is changing. And the only way that I can successfully navigate this change is through emotional release, of coming to terms with the old, of letting it go, feeling the rage. And through that entropic process, I'm coming to something that I don't yet know, but I'm only feeling or sensing. And it is something that embraces a broader perspective of truth and of love, which to the old me would have been disorder, would have been untenable. But as I go through the process, I am more in a state of compassion with both myself and others, as I grieve and let go of that old concentrated energy form. And so many of us are going through that deep letting go, not knowing exactly where it's taking us, feeling as if we are on the edge, as Jeff said.

Ann: And it feels chaotic in the sense that we don't know what order we are approaching. We're in a chaotic rapid in the river of life and there is this incredible fall that we're going through. The larger the fall, the larger the drop, the more rapid it is, the more turbulent, the more chaotic.

Jane: As I go through my own emotional letting-go process, on a deeper level I'm more centered on my Self, that intuitive part which guides me in a different way.

Ann: OK, how do you connect the metaphysics with the physics here? In terms of systems that tend toward less form, less order, how would you add into that system the idea of the source, which is what you mean by the Self, right? Some kind of energy that is continuously coming into you, but does not have to go into any particular form, or at least not support the forms it did before.

Jeff: Isn't that what spiritual energy does?

Ann: Right, but how does that connect into physics? Does it?

Jeff: Yes, it's physical. What most people try to do is to hold on to that energy.

Ann: Hold on to the form.

Jeff: People try to en-form the energy.

Ann: En-form, put it into a particular form and keep it in that form. Instead of allowing it to be a river, continuously washing away whatever forms come up.

Jane: I see the process as getting out of equilibrium, and somehow getting back. I see spirit, our spirit coming in, as we release the old forms, and infusing the densest part of matter.

Ann: There's *room* for it now.

Jane: Yes. Once you release the old forms which were so linear and mechanistic, you're in a quantum state where light/spirit can infuse the densest part of matter and the densest, darkest part of our own selves. Do you see? In other words, the densest part of myself is the victim and the victimizer, the murdered and the murderer these are aspects of me in the deepest part. As I greet them, bring them to the surface, feel their rage, feel their darkness, some natural healing process comes in and infuses them with creativity. This is shadow work. This is the entropic process. We become more compassionate but also, paradoxically, we individuate. We are connected and yet we find our unique way to express this spiritual energy. We each have a role that no one else can play, while at the same time we grow more universal in our love.

Ann: What I have been thinking also, during this whole conversation, is that we usually think of the word entropy as something "bad" because it means the system's running

down. And we're trying to see it in a new way here — which is the same thing we're trying to do with Crone.

Jane: Yes. We've always viewed the later part of life as a time of breakdown. And in a sense it is. But our experience is beginning to reveal that underneath that myth is the growth of the individual, the time when the individual can feel greater happiness, more connection and creative expression.

Ann: So maybe we are beginning to sense the new form, within another system. The old system is breaking down, but as we dissipate the energy that's been locked into that form, we enter a new system which is more universal, larger than the other one.

Jeff: It's *different*.

Jane: It's been transformed.

Jeff: As part of the process of aging, a lot of the physical systems break down in turns of bodily processes.

Ann: Yeah, it's true. I feel like in my body systems are being rearranged. Not so much breaking down, but re-routed.

Jeff: I'm thinking of much older, 30 or 40 years older than you. Or 50 years older, whatever. There is a breakdown of the physical body. But what I think happens is that other things replace that. There's this change that goes on in the system where the breakdown of the physical may not need to happen that way. But we *think* it has to happen that way, so it does. That energy being held in a physical form is being changed into something else. Potential energy is being changed.

Ann: Now that is really weird. The whole idea of potential energy. In other words energy that is being held that has not been utilized yet. Right? And what do you mean potential energy is changing?

Jeff: By looking at potential energy, as if it's just stuck. Instead, we could view it as a potential for something else. Say the "stuck:" energy is a vein of coal in the ground, for example. Who's to say whether it should be taken out or not I don't want to get into that. But what happens in the process of making coal? There were all these plants thirty to fifty million years ago which died and decomposed. Through the process of compaction and layering with rock they became compressed so the energy that had been living became compressed into coal.

Jane: So what Jeff's saying and I agree, is that when we look at energy in concentrated forms going to less concentrated

usable forms with our old world view, it looks like things are winding down, deteriorating. But just as the plants were deteriorating they were forming incredible potential energy. The same with our processes today. The things that we think are inevitable, like aging, like the deterioration of society, and the resulting disorder is the actual ferment for the new order, individually and collectively.

Ann: And it's interesting that chaos theory is something that's really hot. It's popular. That's where we are now. We're in the wave of something that we can't describe.

Jeff: It's only recently been discovered. Thirty years ago. And it apparently was discovered by accident.

Ann: Well, a so-called "accident."

Jane: It was a "chaotic random event."

Ann: Which has a hidden order.

Jane: Right! It feels more and more that the three of us are all on the same wave length.

Jeff: But part of that is because we all feel comfortable in this paradigm. A serious physicist might say that we exist in an evolving state of equilibrium — so the nature of equilibrium is changing.

Ann: What does that mean?

Jeff: That we never go far enough away from equilibrium to observe our fluctuations. We just observe this as a steady-state phenomenon instead of something that's far from equilibrium, and consequently has lots of fluctuations. In terms of human beings, we can think of society as something that's a steady-state phenomenon even though it's obviously not, because it keeps increasing in size. The number of particles in society increases.

Ann: So are you saying then, if you think the way a serious physicist does, then you won't see what we're seeing?

Jeff: Probably not.

Jane: I *experience* it. I must say, my own experience is one of fluctuation, especially recently. Emotional fluctuations.

Jeff: Many scientists would just dismiss those.

Jane: Well that's fine. I don't care.

Jeff: What I'm saying is that a lot of people would just claim the fluctuations have nothing to do with you.

Ann: They're random, chaotic.

Jeff: They're random. They don't have anything to do with you because you're just this physical unit.

Ann, Jane: Oh yeah right, right!

Ann: Now you're talking from within the old paradigm.

Jeff: Yes.

Jane: OK, I see your point. But in the new paradigm you're not just in your head but in your experience.

Ann: You're participating in what is happening instead of just observing it. The difference between quantum and Newtonian physics is that, according to Heisenberg, the observer participates in the event. He can't just look upon it objectively, as if he isn't part of the system.

Jane: Exactly. And perhaps that's a fundamental fact about the new paradigm . . . Whether we're evolving from young woman to crone, or taking the grand evolutionary leap as a collective — it's not something we can just live in our heads. We are now bound to experience it physically, emotionally, mentally, spiritually, with our whole selves.

Jeff: That's what the change of paradigm means. And I expect it's very different for women than for men.

Ann: Well that's what we're wondering too.

Jeff: I have no idea what it's like for you.

Ann: Well, we women have that cycle that's a month long. Men and women have the day-night cycle. And we are all experiencing long cycles that none of us understand. But we women have that one that's a month long. Which really has a whole different feel to it than the day-night cycle. That's the difference, I think.

Jeff: I think there's something that men have that's probably analogous but I have no idea what that is.

Jane: I notice the men I know are very much more affected by the seasons.

Jeff: Well that could be. Men are more solar beings. Which has to do with the seasons.

Ann: Is there anything else we can glean from this discussion on entropy and its relevance to the Crone? I think it's interesting that the idea of the Crone is emerging at the same time chaos theory is developing. All these things are coming into public parlance simultaneously and they are all connected somehow.

Jane: I look at chaos theory as being macrocosmic and I view the Crone and the personal chaos of menopause as microcosmic events.

Ann: Crone is an archetype, thus also collective — macrocosmic. But it does feel like what happens when we go through menopause certainly as chaos theory operating in our bodies.

Jane: Oh, absolutely.

Ann: Something's disintegrating and there's something else coming in and I have no idea what it is and it feels like my Self. On the other hand, how long has the human body been doing this? How long has nature been putting every single female on the planet through this same process? It's not chaotic at all! In that sense.

Jane: But it appears that the female energy itself is evolving — through the reemergence of the Goddess within the patriarchy.

Jeff: Like a quantum shift. The two things are going on simultaneously. At some point in the past, presumably during matriarchal times, there was more of a sense of human beings living in balance with the planet. The patriarchy pushed society further and further out of equilibrium into what could become a random state, where

all that exists are fluctuations. And you can't tell what the underlying pattern is. Nor can you see how to get back to that balance. Sort of like a Croning of society.

Ann: A "Croning of Society." Oh!

Jane: The laws of thermodynamics say that you can't ever go back.

Jeff: That's what I meant. It looks like it goes back but it really is a quantum leap incorporating the experience of the intervening 500,000 years or so. It becomes a spiral rather than a circle. You jump up to the next level.

Jane: I agree, it feels like we are spiraling upward even though sometimes we seem to cycle back and think, "Oh no, I've fallen into the hole again." And we have in a sense, but we get out faster and the hole isn't quite as deep as before.

Jeff: It seems more like a spiral on an individual level. On a collective level it seems more like discrete steps.

Ann: Discrete steps?

Jeff: Like a discrete quantum system. It will suddenly jump.

Jane: Like the hundredth monkey.

Jeff: Something like that.

Jane: Because the real building blocks of society are our own individual transformations. And then the transformations of our relationships. So when it seems that society is most chaotic, is in the process of breaking down, we may, on an individual level, begin feeling more empowerment. Through this entropic process, we may be seeing the first sprout, the first crocus of spring.

Ann: We almost have to look to *ourselves* to see what will happen next in society. The Croning of Society.

Jeff: We ought to have a Croning Ceremony for society.

Ann: Perhaps for the first time in 1000, 5000, 200,000 years, whatever it's been, menopausal human females are now asking, "What is happening to me on every level?" Because that is a model for what is happening in society as we let go of one paradigm and shift into another. What is happening to me, on physical, emotional, mental, spiritual levels? That could be happening to everyone and to the whole society.

Jane: It's like I said on an individual basis. Society is cleansing itself the way we are on an emotional level, so that light can come into the densest of social atrocities. I

have gone through about 12 years of grieving on and off through my late 30s and 40s. As I have transformed through menopause. I feel I am letting go of more than patterns from this life, but patterns on a cellular level, instinctual patterns.

Jeff: Yes. It takes just one person to release family patterns which go back many generations. And if you think of families in a Native American sense, a family is all creatures, so it takes only one person to consciously release some pattern for all creatures.

Jane: And one person's work is going to make it easier for those who follow. Like the hundredth monkey, one person can raise the level of consciousness, so that there will ultimately be a spontaneous transformation.

Ann: Was the advent of chaos theory the first time they really started talking about perturbations in a system affecting the whole system?

Jeff: Mathematically it's been talked about. Edward Lorenz published a paper in the Journal of Atmospheric Sciences in 1963 in which he noticed very strange non-periodic behavior of something that should be thought of as periodic.

Ann: Well that's the first thing women notice. "Oh my God, I'm having my period in five weeks rather than four!" — or whatever it is. That's the first perturbation, which then starts this process happening. We don't understand it, and yet we become aware of it as we go through it. If we bring our internal "fair witness" to the experience, it engenders an amplification of the process, making it different than it would otherwise have been.

Jane: Are you saying "otherwise," meaning if we had lived 50 years ago?

Ann: Yes. I am saying that there is an evolution of the Crone from the ancient sense of wise old woman revered for who she was and what she brought to the community, to the more recent sense of Crone as old woman who, in her isolation, gets forgetful and cranky, to now something beyond both of those. Because Crone doesn't have the reverence of society. Each of us has been doing it on our own, somehow, and yet now we are starting from its disempowered state. It's going to be something else. We don't know what that is. We can't go back, it's not like we are going to be these old Croness who sit in our huts and people come and get our medicines. There's something else going on here.

Jeff: You have to go out into the world and make the medicine.

Jane: And at this particular time in our evolutionary process it may be that the old woman is really, underneath, the first stage of the new evolved woman.

Jeff: I just thought of another interesting metaphor. One expression over the last five to six years has been, “Walking Your Talk.” 300 years ago the Crones were the one who were dispensing the medicine. Now they have to *become* the medicine. You are Walking Your Crone Talk. It’s another way of describing entropy. You are in a state of becoming, becoming something.

Ann: And we don’t know what that is. Somehow that’s exciting, rather than terrifying.