

## **Democracy demands wisdom**

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**Prolegomenon.** The title of this piece is the motto, or at least the clarion call of the US National Endowment for the Humanities which supports research and education in that broad endeavor. Wisdom, one might say, is more the object than the subject of democracy, though as we shall see, the present piece--while recognizing their distinctness--adopts a particular perspective on the relation between object and subject, and indeed between the humanities and the sciences. For that matter, our focus is the scientific nature of the relation between the opposing parts of *all* dualities. What's wrong with democracy, why it is in crisis, goes much deeper than democracy itself. What's wrong, fundamentally, is that people see their relations with themselves, others and the world as either-or. The result is that they are unable to tolerate dissent and acceptance of opposing views. This is what has to be fixed. The following, unorthodox piece, contains two main parts. The first part contains a statement regarding the root cause of the crisis and a solution to how it may be overcome. The second part is an unedited, free-flowing dialogue between the author and Editor (JP) that attempts to place the first part in the context of the problem at hand, namely the crisis of democracy in the age of cities. The piece begins and ends with a brief remark regarding how the perspective taken here had and has practical cultural and economic consequences for a city that is still not out of its darkest days but is making progress toward reconciliation—a hard and demanding word that lies at the very core of democracy.

## **The complementary pairs of the metastable mind**

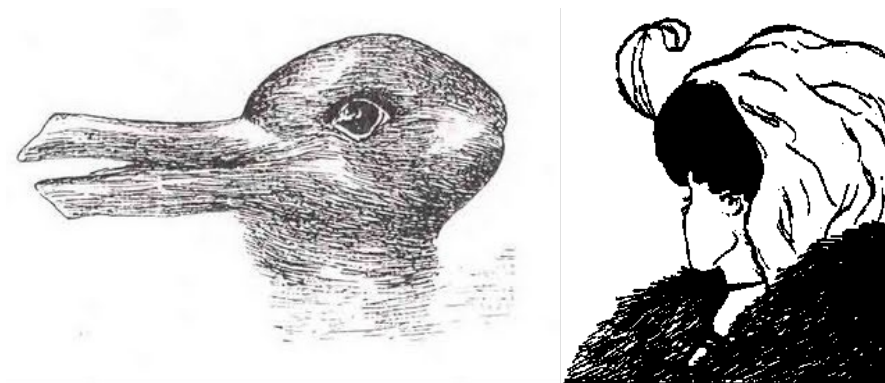
It is a truism that we live in a polarized world these days. No matter the issue, whether race, gender, politics, religion, climate change, immigration, whatever, the either-or mode of thinking dominates. Polarization it seems is here to stay. Why is that? And what can we do about it? The picture shown below is of a sculpture called “Hands across the Divide”. It stands at the end of the Craigavon bridge in Derry, in the northern part of Ireland—the place where I am from--and is symbolic of the hope for an end to conflict and division. In this, the sculpture resonates with the goal of cultivating greater tolerance and unity among human beings worldwide. Throughout history, art and literature have played an important role in helping to promote human understanding. What of science? Despite all our scientific knowledge and all the technological developments that have helped produce this knowledge, it's hard to avoid the conclusion that not much has changed. Wars, poverty, violence, fear, greed, etc. permeate modern life just as

they have for centuries. From science's perspective, we human beings, it seems, are just the way we've always been. This is a hard pill to swallow for all those who believe, since the Age of the Enlightenment, that knowledge is the path to wisdom.



But there may be light at the end of the tunnel. It comes from the 'new science of coordination' called Coordination Dynamics (Kelso, 1995) and the philosophy and practice it gives rise to, called The Complementary Nature (Kelso & Engstrøm, 2006). We may not realize it, but we live in a world of coordination at every level and scale of endeavor. Coordination

Dynamics describes basic patterns of coordination in living things, from coordinating parts of the body, coordinating stimuli with responses, coordinating parts of the brain and even coordinating the bodies and brains of people interacting with each other as in dance and many other social activities (Kelso, 2022, for review). The problem of coordination does not care much about the disciplines we create or the boundaries we set up. Even the difficulty of relating the physical and the mental may be overcome if both possess a common underlying coordination *dynamics*. The language of Coordination Dynamics pertains to both the mind and the body. It's not that one has to mystically interact with the other: both, as eminent philosopher and evolutionary biologist Maxine Sheets-Johnstone (1999) says, are cut from the same dynamic cloth.



What does Coordination Dynamics tell us about polarization and how to get around it? The first thing to realize is that Coordination Dynamics is *nonlinear*. That means that the same input can give rise to qualitatively different outputs. We may come from the same place, with the same background, with the same basic brain anatomy, but hold entirely different beliefs. What is novel is that the science of Coordination Dynamics shows us how such differences are possible, how they come about. At the most basic level of Coordination Dynamics, two states are possible for identical parameters. This fundamentally nonlinear feature of *bistability*, according to Coordination Dynamics, is the likely basis of polarization and the either/or mindset. You

either see the duck or the rabbit, the old lady or the beautiful young one. Each overall picture or pattern predominates. When that happens, details don't matter much. Beaks can become ears, protruding nose high cheekbones, a wizened mouth a handsome necklace. Dynamically speaking, bistability is a source of "isms". "Isms" can be malicious (think fascism and communism for instance) and are an obstacle to understanding: they result in one doctrine being defended or attacked rather than opening up new ideas.

What causes our perceptions, actions and thoughts to switch? What causes us to change our mind? Political scientists can provide a multitude of theoretical possibilities and descriptive reasons why people seem to polarize (how they think and feel about the other, opposed feelings about sensitive issues like abortion, homosexuality, etc). The content of division and partisanship seems to dominate discussion. As yet, however, such descriptions don't say much about the nature of the underlying dynamics. Coordination Dynamics offers a specific mechanism: *dynamic instability*. Considerable experimental evidence shows that switching in both brain and behavior is a self-organized process that takes the form of a nonequilibrium phase transition. The word 'self-organizing' is not a throwaway. It refers to the ability of an open system to organize itself. As Hermann Haken's *Synergetics* (1983) has repeatedly shown, spontaneous patterns in nature arise solely as a result of the dynamics of the system with no specific ordering influence imposed from the outside and no homunculus-like agent or program inside. Nonequilibrium phase transitions are the hallmark of self-organization in living things. Brains don't like fluctuations very much. But fluctuations play a key role, testing the stability of brain states and enabling the system to discover new ones. In Coordination Dynamics, once the system settles into an attractor, a certain amount of noise or a perturbation is required to switch it to another attractor. Or, if internal or external conditions change when the brain is near instability, a bifurcation or phase transition may occur, causing it to switch. Consider such phenomena in the context of American election politics which few would deny are certainly polarized and dynamic! In purple or swing states, each party tries to create the conditions for switching to occur from them to us. This is not easy. People tend to *sync up* with those with whom they share a common identity. So it is with the neurons of your brain. According to Coordination Dynamics, switching involves the active destabilization of people's brain patterns. Even on an individual level, hearkening back to Saul on the road to Damascus, it costs a lot of time and energy to do that.

Whether we change our minds or not, it seems we are stuck with polarization. There will always be a duality—the haves and have nots, black and white, etc. '-isms' like materialism and racism are big ones and seem here to stay. But with the new understanding provided by Coordination Dynamics, we don't have to accept this status quo. Not only is it possible for two or more possibilities to exist, and that switching between them can occur, other possibilities can be realized as well. What's more, as often or not, polarized extremes though real enough, are at

their root idealized states of affairs, more delusional than anything else. How might the science of coordination help us transcend polarization and the narrow mindedness and intolerance associated with it?

One of the chief discoveries of Coordination Dynamics is called *metastability* (meta meaning beyond). Metastability offers new insight into how the human brain works (Kelso, 1995; Tognoli & Kelso, 2014). It shows how individualist tendencies for the diverse regions of the brain to express their independence *coexist at the same time* with tendencies of the parts to couple and cooperate as a whole. Metastable mind rationalizes William James (1890) beautiful metaphor of the stream of consciousness as the flight of a bird whose life journey consists of 'perchings' (the phase gathering, integrative tendencies of the brain) and 'flights' (phase scattering, segregative tendencies). Both tendencies are crucial: the former to summon and create thoughts; the latter to release individual brain areas to participate in other acts of cognition, emotion and action.

In the metastable brain, classical dualities like segregation and integration, competition and cooperation, individual and collective, parts and wholes, etc. exist in a kind of coordinated communion, a complementary code. They are not polarized opposites, diametrically opposing either- or's. In *The Complementary Nature* (Kelso & Engstrøm, 2006) we introduced the tilde (~) or squiggle symbol to express this basic truth: both members of a complementary pair and the dynamic relation between them are required for a full understanding of ourselves and the complex world we live in. It's not one *versus* the other. Dissent between religions or cultures results from an overemphasis on one complementary aspect over another.

The time has come to transcend dichotomy and reject polarized thinking, to embrace the extremes of life and mind in a single unified vision. The tilde or squiggle is not just fanciful philosophy, or a lexical frivolity. It is a way to see contrarities, opposites and their kin as separable yet mutually related and inextricably connected. It offers a perspective of life that helps us overcome prejudice and intolerance. The amazing thing is that this hope for the end of polarization lies in a scientific theory that is supported by the fact that the adaptive, functioning brain (and person) –and indeed collective brains (groups of people) --operate in the metastable régime of their coordination dynamics.

So, when confronted with polarization what to do? Use *the complementary code* provided by your metastable brain: use your squiggle sense. If you see things like yin and yang, organism and environment, nature and nurture, mind and body, friend and enemy, living and dying, creation and annihilation, Muslim and Christian, liberal and populist, Trumpism and Obamaism, etc. etc. as complementary you are exercising your squiggle sense. If you see them as clashing or as contraries, us versus them, nature versus nurture, mind versus body, or if you overemphasize one extreme over the other, you are not using your squiggle sense. Duality and polarization are as old as humanity itself. Science, in the form of metastable coordination

dynamics, offers a complementary code which if used ('the squiggle sense') may help fix polarization, by allowing us to understand it. It's not an easy fix, but Coordination Dynamics offers a way forward. The issue for democracy is not only to mobilize people with the same views, but also for people to live together when their views are different.

### **The crisis of democracy in the age of cities: A dialogue with Juval Portugali (JP)**

**J.P:** The more I write the more I become convinced that your notions of complementary pair and metastability might be central to understand the crisis of democracy that in recent decades is shaking and destabilizing Western democracies. As I see it: after more than half a century of complementary relations (metastable state?) between the two pillars of democracy — liberal values ~ the rule of the 'Demos' — the democratic system reverts to a tension and negation between the two.

So a question: Do you have the will, time and energy to write a chapter that will introduce the notions of complementary pair and metastability and from their perspective examine the crisis of democracy in the age of cities?

**SK:** To the first part of your question, okay. To the second, I am not an expert. Perhaps with some editing and suggestions it could address the crisis in democracy (humanity) in a general way. People seem to prefer binary thinking to resolve their issues, hoping I suppose that they will win and the despised other will vanish into history! In the face of metastable coordination dynamics and the complementary pairs it seeds, this is not, I would say an enlightened solution.

**JP:** The way I see it is that since mid-20th century (after WW II) Western democracy was in a metastable state in which its two pillars (liberal values and the rule of the Demos) coexisted in complementary relations, that is, as a complementary pair. In the last decade or so, for some reasons, this metastable state of the democratic system destabilized (or even disintegrated) and its two previously complementary pillars turned into negations: liberal values vs. majority rule. So, the theoretical question here concerns a dynamics by which a complementary pair in a metastable state, firstly emerges, and secondly, disintegrates and bifurcates into some of its components.

**SK:** The situation you describe seems very reasonable and, in a way, describes the counter situation to the usual message of metastable coordination dynamics (CD) and the complementary nature which aims/offers a way to replace multistable/bistable states with coexisting tendencies and dispositions. That, as it were, describes the move from an either-or to a potentially more enlightened, 'both~and' point of view. So, I do not talk about "metastable states". Rather, the picture is away from states (representing, e.g., polarization--you're in one or the other) to coexisting tendencies. Of course, as I take you to say the opposite is possible too. Say your intuition is correct--that previously (harmonious) coexisting tendencies have

switched to polarized states of affairs. In CD we know what the state variables are, so that when symmetry of the dynamics is broken, metastable tendencies arise. The question is, without knowing what the states actually consist of, can one imply what the (previously) coexisting tendencies actually were? Maybe the point is that the duality is always there, so it is far easier to take sides than see their mutual coexistence. This 'seeing' is a kind of sixth sense possessed by the metastabilian--our hope for humanity :-).

**Note to oneself added in text:** Might there be a measure that expresses the coexistent nature of the elements in a complementary pair? Information not as signals or information content, but as meaning? (Haken & Portugali, 2015). "Meaning" in this picture arises as an operation of individuation between two disparate realities that is created by any given contrariety. Haken and Portugali examine the information content of order versus disorder, and transitions from one ordered form to another (Haken, 1988 Ch 11), but the information exchange or communication between members of a complementary pair characteristic of metastability is not examined. Metastability is where one type of information interacts with another to produce a fundamental change in ontology (after Gilbert Simondon, see Illadis, 2013). Information in this sense (we call it functional information Kelso & Engstrøm, 2006) is created in the passage from metastability to stability (and vice versa). Can such information produce a change of heart?

**JP:** If I understand you properly, you say that there are two basic ways to look at metastable coordination dynamics: as a metastable state – the way I did, and as 'coexisting tendencies' – the way you suggest may give hope for humanity. I accept.

Now, from this follows two ways of looking at the crisis of democracy: how to understand/interpret it? And, how to overcome it? Can we say that the answer to the first is in terms of metastable states, while to the second, by learning from the brain – in terms of coexisting tendencies?

A related question: what are the relations between these two aspects of metastability? To some extent they remind me of the relations between the quantum and classical domains: In the quantum domain (e.g., inside the box Schrodinger's cat is at once alive and dead) while in the classical domain (as in our experiential reality) the cat is either alive or dead.

And a final question: You open your essay with "We live in a polarized world these days." This is indeed so and the crisis of democracy is one good example for this. But has there ever been a non-polarized reality in human history? Can there be a non-polarized reality in human reality?

**SK:** I would say it slightly differently. Polarization, the either-or is a consequence of duality and may be interpreted dynamically as bistability. Duality, which has a long history, has inflicted us in the way we look at things. As the ancients would say, delusion arises from the duality of

attraction and aversion. Every creature is deluded from these at birth (Bhagavad Gita). And yes, metastability (which comes out of broken symmetry in the coordination dynamics) frees us from duality, the delusion of opposites. Potentially, that is...if we embrace it. It has nothing to do with ambiguity or uncertainty.

The difference between metastable CD and the Copenhagen interpretation of QM is that in CD coexisting tendencies exist at the same time. It's a both-and logic. For example, competition and cooperation are both present in the dwell~escape metastable régime; the former expresses a tendency for the parts, elements, components, processes, etc to do their own thing and the latter expresses a tendency for them to work together. A synergy contains both aspects. One might see the synergy as a relational, entangled entity.

**JP:** I fully agree – duality infected us in the way we look at things and it is basic (the basis?) to the way we experience reality. The question is ‘in what sense and way can metastability free us from duality and the (delusion) sensation and experience of opposites? I mean, we can know intellectually that opposites are a delusion, but can we really sense and experience reality without oppositions? Has there ever been such a moment in human history?

As for democracy, from its very origin some 2500 years ago it was perceived in terms of duality: e.g. opposition between democracy and dictatorship. I think that the current crisis of democracy is a transition from one form of duality to another: After WWII, the basic opposition/duality was between Western liberal democracy vs. Eastern (USSR...) communism (that defined itself as “people’s democracy”), with the iron curtain in between. With the collapse of the USSR and the iron curtain, previously suppressed (“enslaved”) internal contradictions (liberalism vs populism) emerged and came to the fore.

**SK:** It seems one might say a few things based on our discussion? Perhaps there is also a connection to the law/jurisprudence and the surrounding issues (see attached paper by Calnan (2018); sadly, the author Alan Calnan passed away, but he got it).

**Note added in text:** Only a flavor of Calnan’s scholarly treatise on what he calls “jurisilience” can be given here. Calnan argues that... *contrary to analytic jurisprudence, law’s nature is dynamic, multifaceted, and synergetic; not static, monistic, and self-sustaining... It seeks to integrate and reconcile knowledge domains, not to invalidate or prioritize them. By naturalizing its methodology, jurisilience avoids the artificiality of caricatured extremes. Jurisilience reveals that law, like humanity, is a complex holistic system rather than a collection of incompatible opposites. While law possesses antinomies, it continually reconciles its inner tensions by coordinating its competitive impulses. The same holds true for legal theory. As law’s conceptual coordination system, jurisilience illuminates the repeating patterns of our most prominent and persistent schools of jurisprudence...By looking at law through bipolar lenses, we cannot help*

*but see a world of bifurcations, binaries, competitions, contradictions, dichotomies, and dualisms. It is not necessarily the truth one sees, but merely the distorting structure of a restrictive perceptual apparatus. Indeed, there would be little point to expanding the search for law's essence if we are misled at every turn by the same warped vision.*

**JP:** As you write, our discussions can/should provide a basis for extending/adapting your paper to the issue of democracy crisis. And many thanks for the interesting study by Alan Calnan. I'll read it carefully, but already from a fast reading it is clear that the issue of jurisprudence has connections to the topics of the book — democracy and cities: All three are products of humans' culture and society, all three are subject to the tension between science and humanities (Snow's Two cultures) and all three have been studied as complex systems. As for coordination dynamics and the complementary nature: Calnan's paper can provide example how they might apply to democracy and cities too.

**SK:** (in response to an earlier point by JP) *-I mean, we can know intellectually that opposites are a delusion, but can we really sense and experience reality without oppositions? Has there ever been such a moment in human history?*

I did not mean that the complementary nature and coordination dynamics preclude or invalidate opposition. Indeed, without oppositions (like integration and segregation, democracy and dictatorship, etc.) there would be no complementarity to talk about. If we step back from what we know intellectually (not always reliable as the Zen pundits have repeatedly emphasized) and attempt a broader or perhaps less narrow perspective on contrariety and opposition, we may be able to approach a more useful perspective. Consider the credo on Niels Bohr's Coat of Arms "*Contraria sunt Complementa*". Note this makes no valuation on contraries, negative or positive, but simply that they are complementary. Bohr's great insight was to see the nature of physical reality, wave versus particle as both~and. We might say Bohr possessed a sixth sense, the squiggle sense :-).

You are likely correct that the current crisis of democracy is a transition to, or replacement of, one form of duality with another. The key is to see such duality in a new light, the light of the metastable brain~mind. With a world so deeply entrenched in the either-or, maybe what's crucial for metastabilians is to survive.

**JP:** I fully agree to your analysis.

Now, let me respond with a bit of nostalgia: If I'm not mistaken, we first met at the 1989 Schloss Elmau symposium. In it I presented an imaginary device — "holomovie" — that attempted to integrate David Bohm's notions of (implicate, explicate) order and Haken's synergetics (order parameter). From Bohm's perspective reality is seen in terms of an ongoing play between two domains/orders: a mechanistic explicate order domain, where entities exist



'outside each other', and a wholistic implicate order domain where they enfold each other. Referred to our discussion: "a world so deeply entrenched in the either-or .." is the explicate order domain, while that of "the metastable brain~mind" and "Contraria sunt Complementa" is the implicate order domain. Between the two there is on-going play of unfoldment-enfoldment.

Bohm didn't elaborate on the unfoldment-enfoldment play between the two domains, and my suggestion was that Haken's synergetics (order parameter) gives an answer. In the Schloss Elmau talk (and in my 1993 book *Implicate Relations*) I applied this view to the Israeli-Palestinian conflict suggesting that at the deeper implicate order domain we Israelis and Palestinians share the same ideology (nationalism) and create (complement) each other; while at the explicate order domain we fight each other (very similar to the reality in Ireland).

Maybe such a view can also shed light on the current crisis of democracy: at the deeper metastable/implicate order domain the two principal pillars of democracy – liberalism~demos – complement each other, while at the explicate order domain they negate each other.

Does this make sense?

**SK:** Schloss Elmau 1989 *Synergetics of Cognition* (H. Haken & M. Stadler (Eds.) Springer Verlag, Berlin, 1990) was a memorable meeting, not least to meet yourself!

Implicate~explicate, enfold~unfold, etc. are complementary. The squiggle matters :-).

Here is a suggestion. How about we put our Dialogue at the end of my piece on polarization? Although it doesn't accomplish everything one might wish, i.e., the explicit connection between metastable coordination dynamics, complementary pairs etc and the crisis of democracy in the age of cities, it does provide a context for thinking about it. Attached verbatim is our conversation. I plan to add a few concluding comments about the city (!) of Derry~Londonderry in which the squiggle played a reconciliatory role.

### **A final word (for now): The squiggle matters**

In the North-West of Ireland, the city of Derry is named after the Gaelic name *Doire*, the place of the oaks. Derry was renamed Londonderry in the early 17th Century under English rule (ironically by a Catholic King James I, son of Mary Queen of Scots). Hands across the Divide (the picture above) is a symbol of hope for the end of the troubles. It was initially announced that Derry/Londonderry or Derry-Londonderry would be a candidate as the first UK City of Culture. However, the slash or dash signified either/or and was divisive. The decision was to go with the squiggle or tilde. The squiggle signified both~and and reflected the cultural heritage of both Nationalist (predominantly Catholic) and Unionist (predominantly Protestant) groups. The

result was a successful bid that brought enormous economic benefits to the community and a sense that the tide had turned.

In a city where power was once abused by a controlling minority and democracy violated through gerrymandering, the conflict is not over, but it is contained. Wiser heads are prevailing from both sides of the community. There are still injustices amplified by poverty and economic hardship. But people are putting the past behind them and working together. This doesn't mean they have to agree all the time, just listen to and respect each other. It is notable that Ulster University—as an institution dedicated to open inquiry-- highlights its Magee campus, as offering “an intimate learning environment located in Derry~Londonderry”. Former President Barack Obama has recently called for a ‘Universal Language’ that transcends the either-or polarizing language. In the author's view, he's asking for people to use their ‘squiggle sense’, to appreciate their complementary nature and become Metastabilians. That's what the science of coordination is telling us. And this is what democracy deserves and demands.

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