

# Why Do We Want To Live In Cybernetics?

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From the inception of the American Society for Cybernetics in 1964, its members have asked periodically, “Why this society? What is its purpose? What should it do?”

Most pointedly, these questions arise in the face of today’s global challenges: energy and global warming, water and food, health and social justice. Designing for these challenges demands systems literacy as well as cybernetics, the science of purposive systems, to help society steer toward a world that it wants.

Most recently, these questions arise after a significant increase in strength for the ASC under the leadership of Ranulph Glanville, president of the society from 2009 through 2014, and his executive team. As a scholar and as the society’s president he emphasized the theme of “living in cybernetics,” that is, embodying cybernetic ideas and ethics in everyday life. As designer and teacher he beautifully articulated the relationships of cybernetics to design.

With tribute to Glanville’s contributions to our community and our discipline, I call upon the ASC to move beyond shared interests and accumulated knowledge to become a force of action. From first-hand history with the society since the 1980s, I highlight specific “clarities” expressed by the society’s participants from that time, while calling for greater currency for our time, in the form of new members and new actions. I propose a rationale for using second-order cybernetics for the design of a better world, the Designers’ Imperative. Lastly I encourage every member to approach today’s vast design challenges by tackling focusing problems through which progress can be made.

**Keywords:** second-order cybernetics, design, cybernetic curricula, global challenges, variety, focusing problems

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## Living in Cybernetics

In the cinematic masterpiece *The Red Shoes*, the brilliant impresario, Boris Lermontov, dominates a world-renowned ballet company whose artistry and success is a result of his obsessiveness. (Think of him as a role model for Steve Jobs from a different domain of practice.) On first meeting a young ballerina Lermontov demands of her, “Why do you want to dance?” She pauses the briefest moment and shoots back at him, “Why do you want to live?” He is caught off guard and can only slowly answer, “Well... I suppose... because I must?” She looks at him steadily and says, “That’s my answer, too.”

With this I want to reframe this conference’s theme, “Living in Cybernetics,” in this way: “Why do we want to live in cybernetics? Because we must.”

Living in cybernetics is who we are, what we do, how we want to live. We have taken to cybernetics because it has answers for us, personally for certain, and likely in our careers. But for a professional community, just as for an individual or a society as a whole, only wanting is not enough. As cyberneticians we must be deliberate in

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action based in purpose. As a society as well as individuals, I feel we can better live up to this responsibility. We can do better.

As explored by this conference, living in cybernetics requires self-reference—being aware of living in cybernetics, and being aware that we are aware. (Think of a fish that reflects on its life in water.) As “second-orders”—wait, that slipped out, I just made that up. It’s like AIs—*AI* as in artificial intelligence and pluralized into a noun, a recent coinage used to mean autonomous systems that operate according to the tenets of artificial intelligence. Similarly, second-orders are autonomous systems that operate according to the tenets of second-order cybernetics. Thus we can claim *embodiment*, just as the AI community wishes to for AIs, but here for second-order cyberneticians. Good. May I now declare that we may use second-orders to name the entities of agency that we are, and thereby juxtapose our humane counter-point to AIs, which in contrast are based on the deterministic culture of digital computation.

As second-orders we are aware of what we are aware of, aware of what we want to do, and why—aware of our goals. While gladly participating in this conference session named “Past Presidents of the ASC,” I have the responsibility to declare that I am not a past president, having ducked any invitations to run for ASC office for more than thirty years (because I wouldn’t be helpful at it). But I have a compatible purpose in participating in this session and I hope to be clear about how and why that is so, for that is my purpose—to tell of what I have learned from cybernetics and from the ASC, and to propose a path of action.

To establish some credibility and justify my participation here, I offer that I have given some form of presentation at roughly half of the ASC conferences over the last thirty years (and that without counting cabaret performances with Herbert Brün). At Ranulph’s invitation I ran for and was elected a trustee of the society and served as the chair of the trustees during his presidency (he overruled my objections about not being helpful). Thus I am here with whatever authority you may render to such a participant-observer. For all these years I have hovered around past, current, and future presidents of the society, watching and appreciating all the heavy work they do, yet also aware of heavy work that I believe remains to be done.

Now let me frame my presentation with another question: “What in the world are we doing?” As a society, are we dancing, as is Lermontov’s ballerina, are we living in cybernetics, or just talking amongst ourselves?

### **What in the World Are We Doing and What Are We Doing in the World?**

Almost 50 years ago in “Cybernetics of Cybernetics,” Margaret Mead characterized a joint meeting of two societies she was familiar with as going through “a perfectly stereotyped, conventional, and uninspired rigmarole” (Mead, 1968, p. 9). Worried that the ASC would repeat such behavior, she asked about our society, “What in thunder are we founding?” (Mead, p. 10).

My worry is that we are Margaret’s nightmare—a society that has lacked sufficient self-awareness manifest in action to operate effectively in the world itself,

not just in the world of societies. I want to offer constructive feedback through this observation.

Recently I have heard of renewed efforts by highly effective organizational actors to inter-connect systems societies, including Ranulph Glanville as ASC's president, Ray Ison as ISSS's president, Gary Metcalf as IFSR's president, surely others and surely there is value in these efforts.

But, as the corny joke goes, don't call me Shirley. I mean, surely what? I am not sure that this is an answer to living in cybernetics, because societies speaking with societies reach societies and maybe not society. Heinz von Foerster's distinction between being *a part of* the world vs. being *apart from* the world thunders now in my ears: What must a society do to be a part of the world? (von Foerster, 1994). I acknowledge that these efforts are sincere, energetic, professional and completely well-meaning. They may even be a useful first step; but I can't help but ask if they are necessary. Surely, they are not sufficient.

We need to speak with and to co-evolve with the world-at-large, far beyond the system boundaries of societies academic, professional or otherwise. Given the weight brought by the individuals I mentioned, I expect these societies to move to acting in the world over time; but I'm in a hurry. Isn't the world too much in peril, and resources too few, to first take the path of talking to people who already get it and whose business is to think and talk?

I believe that we need to seriously focus. If you focus on the word *focus* in terms of seeing and optics, focus implies clarity. So, by focus I mean that we need to understand the clarity that cybernetics brings, and to bring that clarity to where it may be helpful. To where it may be a difference that makes a difference to our futures. In cybernetic terms, clarity is leadership and leadership is the reduction of uncertainty. This framing of clarity incorporates our values in language, a language we need to be capable of taming complexity (Dubberly, Esmonde, Geoghegan, & Pangaro, 2002). Values ought to include ethics; or, per Heinz von Foerster, it is imperative (von Foerster, 1994)—values of deliberate articulation, collaboration, conversation (from the Latin, *con-versare*, to turn together).

### **What Are the Clarities of Cybernetics?**

Norbert Wiener was clear about the mechanics (read: the mathematics) of cybernetics and also about the social implications. (Glanville has said that Wiener made an error in publishing *Cybernetics* before *The Human Use of Human Beings*, because it forever skewed the common perception of the field to be mathematical instead of “a way of being in the world” [Glanville, 2014, p. 3].) We can read Wiener sixty years after his writing and hear the same concerns for privacy and loss of control to technology as in today's discourse.

Margaret Mead framed second-order cybernetics by calling it *cybernetics of cybernetics*—succinct and clear—and gave us an invitation to understand both

cybernetics and second-order in a single phrase (Mead, 1968). (This clarity was likely influenced by von Foerster, as cybernetic lore goes.)

Ross Ashby's concept of variety and the design guideline of requisite variety are irreplaceable for understanding, critiquing, and improving mechanical, electrical, digital, biological, and social systems. Variety, strictly, is the number of states a system may possess. Variety, informally, is the range and depth of responses, the capabilities and capacities, that a system can wield as it attempts to regulate those aspects of the environment which it is designed to attend to. Ashby's (1956) law states that a system must have the same or greater variety as its environment in order to regulate it—to get what it wants. If it does, the system possesses requisite variety. (If there were only one concept that I would like design students to carry with them into their career, it would be this one.)

My participation in ASC conferences began in the 1980s, after Stuart Umpleby resuscitated the organization. Present and active were von Foerster, Humberto Maturana, Francisco Varela, Gordon Pask, Herbert Brün, Stafford Beer, Ricardo Uribe. That was an amazing time. And they were clear<sup>2</sup>:

- Von Foerster spoke on ethics, the imperative of increasing the number of choices, and (as already mentioned) being a part of the world. He makes it easy to reference his clarities, because he writes with them; one need only read him in the original (von Foerster, 1984, 1994).<sup>3</sup>
- Maturana spoke on living together in language, coining *linguaging* (Maturana, 1988); and how the space of possible change is delimited by that which we wish to conserve, a design guideline if I've ever heard one (recapitulated more recently in Maturana & Davila, 2013).
- Pask spoke of *conversation* as an all-subsuming model of interaction, encompassing reacting, regulating, learning, understanding, resolving, and creating. His model of conversation is a complete scientific theory. While his prose is regarded as difficult, his models are clear and prescriptive (Pask, 1976, 1980).
- Brün spoke of *retardation of decay* as the primary action of art and a responsibility of living systems for the creation of the new (Brün, 1990).
- Beer held forth on his viable systems model, on Ashby and variety, on a vision of regulating steel mills by sensing the interactions of daphnea (small planktonic crustaceans), all of which had the effect of pushing us out of the box of electronics and digital computation (Beer, 1972).
- Uribe, modest and little-acknowledged co-creator of autopoiesis with Maturana and Varela (Glanville always made sure to include him), would

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2. This list is incomplete in length and depth, unfair to those included and those not.

3. Evidence of von Foerster's clarity can also be found in the swift degradation of clarity whenever he is misquoted, as happened recently at the ASC 2014 conference itself. Correcting misquotes by referring back to original texts is an important activity which all members of the society should take as their responsibility, especially by those who are told they misquote.

arrive with a machine to explain Ashby's ideas, experientially instead of by talk or diagram. To know through experience is more clear than to conceptualize and rationalize.

I felt lucky then, to have experienced these individuals live and in the flesh, breathing clarity into conversations at every turn. I feel luckier now, knowing what a rare time it was: I believe it is fair to say that era has not since been surpassed.

Their ideas are still clear and still valuable today, and a lucky surprise for anyone who doesn't know them. In the face of today's very difficult challenges, their ideas are useful, sometimes necessary, because the variety they carry is needed in today's conversations, to tame today's challenges. Today their ideas may be necessary—but, on their own, they are not sufficient.

Not sufficient because, while these ideas and others unmentioned may still be clear, they are not of the present day—not of our time, today's time, 2014. If we were so lucky that the designers of these ideas were at this very meeting, those ideas would not be sufficient to tame today's challenges.<sup>4</sup>

They were clear then, in their context—for clarity is also a moment in time. A certain insight fits in a time and may not apply later. As Michael Geoghegan would say, “Answers are of the past; answers are dead. Questions are ‘of the now.’ Questions are alive” (Geoghegan, 2014, pers. comm.).

We need better questions.

I love the clarity that comes from this history and these individuals, and I want what they know, and I'm sure that all of us, even together, do not carry forward what they knew, their variety. But my focus here, perhaps my better question is, “What must cybernetics bring to the world of the now?”

## Design and Cybernetics

I claim that it is in the doing, in the dancing, that we bring cybernetics appropriately and effectively to the world, beyond thinking or talking about it. This is what Glanville meant when he coined *living in cybernetics*. At first I misunderstood his stance as being simply against application of cybernetics, which could sound as if he just wanted to keep it conceptual. I came to understand him to mean that *to apply* implies a separation between theory and action, and that there should be no separation. To live in cybernetics therefore means to embody what might in some manifestations be a theory, but which is insufficient if not enacted.<sup>5</sup> But if I'm going to fave something or “+1” or “LIKE” something, it's going to be the doing beyond the talking. And I use those metaphors because they are markers of the current age,

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4. Perhaps that is why, when the 1990s came around, some in this society thought, essentially, enough already with these old guys. Glanville, for one, thought they had had their day, and said so. Yet there has been a vacuum because, between now and then, old clarities have been forgotten and too few new clarities have been revealed.

5. I admit that on a personal level I am relieved that we did not disagree. My thanks to Christiane Herr who helped me to understand Glanville's intent.

supposedly more prevalent among the younger demographic, those who use technology in so much of their daily, moment-to-moment lives. And for these users, what do they want to do? (Perhaps we should revise our vocabulary and call anyone who uses a machine to be a cybernetic entity, a second-order, and therefore a doer with purpose.)

Those who are younger know—wait, all of us know!— that the world made by those who came before us and by us as well, is, let's put it this way, not in good shape. And I think we all also want, certainly as articulated by the design students in their 20s and 30s that I come into contact with, effective viewpoints, tools, methodologies and in general guidance for action in order not to keep going wherever in thunder we are going (thank you, Margaret). For untamed or unchecked or unregulated, our world is going against sustainability, against a balanced ecology, against peace, against so many things that we, our generation and before, have failed to achieve by not doing better.

The last few years has seen increasing attention to *Design* in and across spheres of academia and business and technology (Martin, 2009). Now recognized as far more than the appearance of artifacts, Design, with a self-conscious capital *D*, may with time rightly touch all aspects of human endeavor. I propose the actionable definition of Design to be seeing a situation that can be improved and taking action to improve it. (Yes, it's the cybernetic loop of sensing, comparing and acting.) To a lesser but still note-worthy extent, the domain of systems has also grown in mindshare.

Here is where I find a purpose for Cybernetics. To quote Hugh Dubberly:

Our world appears increasingly complex—technically, politically, and economically. The challenges that matter (e.g., energy and global warming, water and food, health and social justice) all involve systems. And in the day-to-day world of organizations (whether for-profit or for-the-public-good), innovation almost always involves systems, too. (Dubberly, 2014a, pers. comm.)

That means that anyone grappling with these challenges needs to understand systems—to be systems literate. If communities of practice were to become so, it would constitute a shared language for designing for our world. We need new language because complexity is a consequence of language and not a property of the world (von Foerster, 1984). As designers we must use language to explain what we see, what we want to improve, and how we will improve it. So: We are responsible for the language we use, because it is inseparable from the designs we make.

My desire professionally has been to improve the acts of Design whether regarding the design of an iPhone or any kind of screen, or any service, or the processes of an organization. My approach, based in the variety I wield, is to apply cybernetics to understanding and improving the practice of Design. Ranulph Glanville has been the most philosophically pure advocate of the relationships between cybernetics and design (Glanville, 2014), while other collaborations incorporate the second-order recognition that cybernetic models are explanatory of human interactions (Dubberly & Pangaro, 2009a, 2009b) and of the acts of Design itself (Dubberly & Pangaro, 2010). Designers are advantaged, I believe and I have

witnessed, when we take action through the clarities of cybernetics. Let this be called *Cybernetics for Design*.

One of the doings that ASC could do would be to make curricula and fashion methodologies—to make communicable ideas, communicable clarities—which help frame and understand and help action in the world, in the second-order sense, through teaching and practice. I understand that the ASC intends to make a curriculum for cybernetics, a claim outstanding for some years; it isn't yet possible to judge the result. In the meantime I want to offer a difference between a body of ideas, which I understand is the intent of the ASC curriculum, versus a framework for action.

Dubberly has for many years called on designers and design organizations and educational institutions to be responsible, just as institutions of law, medicine and science have been, to build a body of knowledge that is clear, communicable and effective for its practice. But he also makes a clear distinction between ideas (understandings) and frameworks for acting (doings, in our lingo from Maturana). In his “Systems Literacy Manifesto,” Dubberly (2014b) calls for systems literacy, defined as reading and writing of systems, as a foundation of a new era in design teaching as well as design practice. *Writing systems* means the ability to make and modify, not just understand (reading) systems. I agree with Dubberly that systems literacy is necessary for today's design practice.

To that end Dubberly and I are elaborating on the curriculum that evolved out of our joint teaching (Pangaro & Dubberly, 2014b). Here is our design rationale and how we frame our responsibility in it:

*If Design is our responsibility, why is systems literacy necessary?* Because Design is no longer the realm of the lone craftsman and involves systems of systems and teams upon teams. To understand the operations of the results of our designing, as well as to communicate that understanding, at a minimum requires first-order systems literacy.

*But if systems literacy is necessary, is cybernetics necessary, beyond systems dynamics or general systems theory or emergence?* We answer yes, because the domain of Design subsumes human agency and purpose, which must be explicit in the models we use for designing. Systems dynamics and general systems theory do not adequately model *agency*, the taking of specific action from a set of choices in order to (in hope of) achieving a goal.

*If cybernetics is necessary, why second-order cybernetics?* Because the mortal challenges of today's world are *wicked problems* (Rittel & Webber, 1969) wherein we must acknowledge framing and subjectivity, and hence the role and responsibility of the participant-observer, in the designs we propose. We must argue persuasively for our choices.

*If second-order cybernetics is available as a methodology at all, why must it impinge on Design?* Because anyone who wishes to have impact on the world—to recognize a situation and act to improve it—must be responsible for that process of Design, and therefore be responsible to seek the most effective methodologies, including new sharable languages, such as Cybernetics for Design.

These are justified tenets and not yet the curriculum itself, which is a work-in-progress.

An example of an existing design methodology is Daniel Rosenberg’s “Transformational Design,” an operational approach to design practice that deftly applies the work of Humberto Maturana to create a relationship between designers and users which does not impose the designers’ preconceptions or hierarchical position, presumed or actual (Rosenberg, 2014).

In sum, designers of any stripe must be responsible for our own design literacy, and therefore systems literacy. As designers, we must wield cybernetics in acts of Design. Call this the *Designer’s Imperative*.

### **Doing the Doing**

If we want societies for systems and cybernetics and we wish to converse across societies and seek comities, let’s do that. But let’s not just talk amongst ourselves, let’s pick a *focusing problem* or question and try to nail that, as a start. Together. Do it. Design something. Act in the world. Now.

Defining a focusing problem is the difficult but critical challenge of framing a relatively small but representative problem that is more tractable than the scope of a full-blown wicked problem in the world. But if we frame the focusing problem carefully, and then we nail it with our models and language and clarities—maybe we can have something happen. That serious claim, overly-modestly stated just now, can be made because meeting the conditions necessary to define a focusing problem will lower the uncertainty of success. Yet it can take half a year or more to define a focusing problem that:

- a. Participates in the new economy—this means incorporating the manipulation of an informational flow rather than transformation of mass and energy (atoms to bits)
- b. Removes uncertainty or brings order to disorder—this means the result is worth something in the market, it has value for which individuals or businesses will pay
- c. Connects us with who we are (our history) and what we can see ourselves engaging in—it is consistent with our local social system (team, community or organization) and our expertise (the “DNA” of the group)
- d. Allows us to define and access requisite variety of domains of expertise needed to frame and solve problems, to design for requisite variety
- e. Attracts and engages an initial set of individuals who want to do it
- f. Serves as an exemplar or teacher for the business or problem space as a whole—so that what is learned can be reproduced across broader domains, teams or language spaces (Geoghegan & Pangaro, 2008).



Here is my path to finding my focusing problem: As a general goal, the complex, difficult problem I want to solve is to make a computational engine that is not for searching but is for questioning. I want a design partner (Negroponte, 1976) for co-evolving better questions. I say *co-evolving* because I don't expect a computational engine to be able to solve the problem completely; it lacks context and intuition for which a human in the loop is essential.

Finding and then learning what is already known takes time and attention as well as access (as in Google), surely. Yet knowing what might (enumerating choices) and ought to come next (involving preferences vs. trade-offs) is far harder. It is also unsolved computationally as yet but far more valuable because it solves a current problem, not a problem of the past. A better-question engine would increase the velocity of insights compared to a conventional search engine. It should lead more quickly to innovations.

The general case of a better-question engine is huge, of course; I claim it is a much harder problem than, say, indexing all digital information and delivering ranked search results from keyword queries—from a theoretical viewpoint, the problem that The GOOG (the Google search engine) solves is trivial, a simple matter of programming. But the challenge of evolving better questions is unclear in scope, means and computational requirements. To take on this general goal would be foolish and, it turns out, not as efficient a place to start than if condition (f) can be fulfilled for a simpler case. Instead, we can define a focusing problem that, if solved, tells us how to solve the general case.

So, as a candidate for our focusing problem, let me propose: “What is a useful metric for better questions such that a machine may calculate it purely from digital content, and use it to present a ranked list of useful questions from which a human may select the best?” If we had such a metric we could run machines in server farms to generate many questions, and then rank-order them for presentation and selection by a human in the loop.

Conditions (a) and (b) are clearly fulfilled. Condition (c) is consistent with the history of interactive cybernetic experiences (Pask, 1982) and my long-term interest which is based on Pask (Pangaro, 2001). I believe that condition (d) is fulfilled, since expertise in semantic extraction, text segmentation and parsing are clearly required. (At a more prosaic, compute-it-fast-enough-to-be-useful implementation level, a distributed parallel-computing architect also comes to mind.) I would further propose that entailment meshes (Pask & Pangaro, 1980) would be an effective tool.

I confess that condition (e) remains to be proved but I have confidence that it would also be met.

While I'm completely serious about my deep interest in creating a better-question engine, it is only one example of a focusing problem and idiosyncratic to me. We need multiple focusing problems, multiple groups, multiple directions. It is time for groups of us to declare our own and get on with it.

## Funding Cybernetics + Design

I'm thrilled to meet new participants here at the 2014 ASC conference, who are not of the era that was my start with the ASC, but who will become part of today's era and the eras that follow. And I'm thrilled that the Society has shifted in its scope, range, conversations. Glanville and his executive team of the ASC have achieved a great deal. I hope the society will reward them by continuing the path they have set under the new executive starting in 2015.

But as to this ambition to make a difference in the world—please make it more than pushing out our PDFs, for which I am also guilty—how do we get cybernetic ideas into action out in the world? We need resources, surely.

I'm not against money coming from any reputable, non-conflicting source. But let's design this intervention and ask ambitious, better questions such as, What about Larry and Sergey? These are the founders of The GOOG, dropouts from a Ph.D. program at Stanford University, who felt their pursuit of a startup was more important than pursuit of an academic degree. Whose program? Terry Winograd's program. Winograd went from creating the great exemplar of AI programming (Winograd, 1971) to evolving his thinking toward Maturana and cybernetics (Winograd & Flores, 1986)—and to being attacked by his former supporters in AI as a result. Ironically, the founders of The GOOG were supported by a cybernetic supporter and are now two of the richest persons on the planet.

There are huge profits in Silicon Valley—The GOOG, Facebook, Apple, for example, making hundreds of billions of dollars. Might we ask them, “Doesn't cybernetics deserve a little of that profit? Can we have a little?” We must ask ourselves, “What would it take to appeal to them?” Can we say, “Aren't you interested in brain-like behavior, whose conceptualizations began with cybernetics, which today still offer alternative approaches to AI and promises to solve problems that AI cannot, and with a humaneness that AI has not?”

Noam Cook (Cook, 2014, pers. comm.) offers a clear meeting scenario with The GOOG, Apple and others in which Wiener's book *Cybernetics* would be held up in front of them all. “See this?”, we might address them, “this is the source of your profits to date. And this was written in 1948. Cybernetics has evolved greatly, and is ready to create even greater profits for your industry. Here's how...”

I love this scenario. Can we make it happen? What other preparation do we need to make that opening pay off, for Cybernetics and for a tech industry transformed by Cybernetics, and for society? Are these better questions? Either way, what are even better ones?

## What Is Our Story for Today's World?

We fail if we don't fit, period. Darwin, Maturana—get it, ok?

I met a filmmaker at the 21st Century Wiener Conference held summer of 2014 near Boston who was asking the question, “Did Wiener lose?” This is a framing

question, a way of entering the realm of the legacy of cybernetics, where it's been and where it might go as well. He wants to understand the story and he's not sure what story he wants to tell. And I want him to talk to everyone in our field and in related fields who is part of that younger demographic. And to ask those individuals what they see in cybernetics. And there are many amazing individuals: designers and artists, architects and technologists, scientists and engineers—a wide range who see what we don't see because their clarity is about an age that is now emerging, as opposed to the age that "emerged us." So, that's a set of conversations that we can catalyze. And these conversations are of the general class of conversations that get this society, and the discipline of cybernetics generally, talking outside its own boundaries. This is more than societies talking to societies. Standing with the creation of design curricula, this is another focusing problem where, if we create rich conversations, we prepare ourselves for the harder, broader conversation with higher stakes and greater rewards.

### **Call to Action**

What are the tools we have, what are the mechanisms we can make, and what is the clarity we offer? If we have any answers to those questions, then we have conversations to enter, and we can help support others in where they want to go. If we cannot answer them, then it's time to pack it all in and retire the society—as Mead explicitly proposed in 1968. Otherwise, what in thunder are we accomplishing? We might just as well leave it to other fields to pick the bones of cybernetics, and leave to others the history they want to write.

I confess I lack the maturity of patience for academe when it's focused on answers and not questions, when it tolerates mere thinking without acting. I am not arrogant when I declare these as limitations of my character. What I want to be responsible for is being a part of the world, of living in the world of applying cybernetics, of being cybernetical, choosing a language I am responsible for, just as I am responsible for my actions.

We are all our own Boris Lermontov. If we are to ask another, "Why do you want to dance?" we must then also ask this of *our selves*. Each of us comprises many selves, many individuals with different and conflicting viewpoints. We talk amongst our selves when we have internal conversations, but just as in the exchange in *The Red Shoes*, the conversation is more powerful—has more variety—if we engage with others. Thus, as a community of cyberneticians let us ask each other and all of our selves, "Why do we live the lives we live?" In that answer lies responsibilities for our actions. As Cyberneticians, as second-orders, we might also ask, "What variety do we uniquely contribute?" Again, we must be responsible individual and collectively to answer this question. For myself, I feel cyberneticians have better questions. Let's ask them everywhere we go.

Thank you.

## Dedication

This text was derived and expanded from a live presentation at the Conference of the American Society for Cybernetics in 2014, delivered at the invitation of Dr. Ranulph Glanville. It is dedicated to Ranulph, whom I met through Gordon Pask in 1976. Ranulph served on my Ph.D. thesis committee led by Pask and was a life-long conversant on the topics of conversation, second-order cybernetics and, more recently, design.

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