Author's Response

"Playing With Dynamics": Procedures and Possibilities for a Theatre of Cybernetics

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> Upshot • Operational concepts underpinning a proposed cybersemiotic theatrical laboratory are further refined while questions regarding its experimental orientation remain.

« 1 » I must begin this response with an expression of deep and sincere gratitude to the eight authors of the open peer commentaries and to the editors of this journal for facilitating their rich contributions to this project. The questions and comments they have provided have not only helped clarify my reflections on the work as it has proceeded thus far but have also played a pivotal role in inspiring and orienting its direction moving forward. My response will be organized along these two thematic lines under the categories "procedures" and "possibilities." In the context of this response, the term "procedures" is meant to denote both the particular research protocols queried by Bruce Clarke & Dorothy Chansky and the embodied cognitive operations of actors and audiences interrogated by Edgar Landgraf and Bernd Porr. Possibilities will reflect upon Larry Richards's and Ben Sweeting's suggestions for future directions of the overall project as well as Lowell Christy's endorsement of, and Albert Müller's objections to, its conceptual foundations.

Procedures

« 2 » Clarke & Chansky's request for clarification regarding the research protocols employed in the experiment described in §20 of the target article is well-grounded given the significant potential ramifications of the details in question. To clarify, the description of the two sets of performances (autopoietic and allopoietic) in §5 of their commentary is, indeed, accurate. The term "invite" in both instances refers to an invitation to "random people to show up" (ibid.) to a single performance put out through the social media outlets of the Theatre and Film and Psychology Departments at UBC as well as personal invites from the investigators (Alan Kingstone and myself) and actors. Suspecting that the social media invitations were most likely to solicit the participation of university students, the personal invitations (targeted toward non-theatre specialists) were intended to introduce some diversity into our subject pool. Admittedly, the majority who attended would still fall within the categories of the WEIRD acronym (§6). They are also assumed to be relatively interchangeable in their competency as spectators of naturalistic/realistic theatre given its position of dominance within the field and the ubiquity of its modes of actor performance across the adjacent fields of film and television. As the authors indicate, more experimental aesthetic modes would likely introduce new potentially confounding influences (§7) but this was not a concern in this instance.

« 3 » As a description of the cognitive operations underpinning the kind of everyday social behavior that naturalistic theatre seeks to simulate, Porr's insistence on the appropriateness of forward modeling and open control loops provides a welcome conceptual refinement that is entirely compatible with the Stanislavskian notions outlined in the target article. Indeed, many moments of heightened drama occur precisely when the forward model that a character is depending on is perturbed and "these forward models fail […] and the feedback loops need to kick in" (§4). Furthermore, as referenced previously in Scholte (2015), Stanislavskian teacher/practitioner Uta Hagen tells us that, in life, while "[w]e never know what the next moment will be […] we always have expectations about it." "Utter spontaneity" onstage becomes possible when the actor can learn to "suspend knowledge of what [is] to come by unearthing the character's expectations" and let those expectations collide with what actually takes place "in the moment" (Hagen & Frankel 1991: 128). The forward model/open loop conception of the character's operations also seems compatible with an earlier cybernetic conception that proved useful in rehearsals for our experimental production of *Salt-Water Moon*: Warren McCulloch's postulated "redundancy of potential command" summarized by Gordon Pask as describing a set of "goal-directed subsystems" that "compete for dominance" with the command position "shift[ing] from time to time in a way that favors the subsystem currently in possession of the most relevant information […] from the environment (or from the aggregate of subsystems, or both)" (Pask 2011: 528).

« 4 » Extending Porr's cocktail party scenario, an individual in attendance in order to seek a potential mate can fairly effortlessly engage in small talk relying on open loop forward models while the "search for mate" subsystem is highly attentive to feedback as he or she surreptitiously scans the room for potential candidates. In this sense, the subsystem currently in command may be engaged in a closed loop while the other subsystems necessary to continue to function successfully in the environment can "get by" on open loop forward models. That is, until the individual distractedly commits a conversational faux-pas and their partner responds in a perturbing fashion. At that moment, the "social damage control" subsystem will seize control, temporarily overriding the forward model of the conversational partner and closing the loop until the situation is satisfactorily stabilized and "search for mate" can resume the command position. Again, such moments are often the stuff of drama; or perhaps, more often, comedy.

« 5 » Regarding the film-based improvisational processes referred to by Porr (§9), both varieties have played a major role in my own artistic practice as I have been an actor/co-creator on three feature films developed in the mode of Mike Leigh (*Dirty*, 1998; *Last Wedding*, 2001; *Crime*, 2007) and a trilogy of films that, like *Victoria,* were entirely improvised based on objectives and given circumstances in a collaboratively developed treatment (*Mothers&Daughters*, 2008; *Fathers&Sons*, 2010; *Sisters&Brothers*, 2011). However, with a focus on circular causal interactions and increased observer agency for the audience, the level of directorial/editorial control in terms of shot selection, pacing, rhythm, size, etc. and the linearity of traditional editing strategies, I have not found the medium of film to be as fruitful an arena for the type of investigation I am carrying out as live theatre. Of course, it is possible to push against predominant, mainstream cinematic techniques and provide more room for the elements in which

I am interested within the filmic medium, and it may yet find its way into this program of research. Certainly, improvisationally-generated films manifest performance modalities that are markedly different from traditional author-centred works and, like Porr, I would attribute this difference to the wider margins within which cybernetic self-organization can take place facilitated by these processes.

« 6 » Landgraf's incisive problematization of our notion of naturalness resonates productively with Porr's observation that "improvisation imitates everyday double contingency reduction and acts as a convincing demonstrator/simulator of how everyday communication emerges" (§8). In this vein, Landgraf's previous deployment of the manner in which Judith Butler "draws on the concept of improvisation to describe a person's practice of enacting his or her identity in terms of a complex interaction between individual doing and societal constraint" (Butler 2004: 16) in the monograph to which he refers (§2) provides a useful lens through which to view the "simulation" of the "everyday" that a second-order cybernetic conception of the naturalistic theatre might illuminate. In interrogating cultural norms around gender, Butler describes the manner in which women are expected to make manifest behaviorally a socially constructed model of sanctioned femininity as an "improvised performance in a scene of constraint" (Butler 2004: 1). While I do not wish to diminish, in any way, the depth, power, and specificity of the manner in which such mechanisms impact and oppress women in particular, I agree with what I take to be Landgraf's suggestion that the notion of "improvised performance in a scene of constraint" can be usefully extended to describe the inherent performativity of all manner of social identity lying, mostly unconsciously, at the center of our daily living. Landgraf tells us that Butler's vision of the highly circumscribed agency emerging when "individual 'doing' intersects with the particular social constraints it engages":

> "[R]everses the causal link between doer and deed, giving primacy to the 'doing' rather than the doer. She asks us to conceive of agency (or, more precisely, of the mere appearance of agency) as the *result*, not the source, of a continued, improvised practice. In this regard, improvisation's object of invention – the 'thing' created – is the improviser herself; for Butler, improvisation marks the simultaneous composition and performance of the 'doer'." (Landgraf 2011: 18)

« 7 » The creation of "character" by an actor in the Stanislavskian mode is no different. This is why actors training in this tradition are constantly urged to let go of any notion of "character" as a consistent entity outside themselves that they must understand, describe, and then seek to recreate, and rather, simply to be "themselves" inside the given circumstances (i.e., constraints) of the text on both the level of the societal milieu represented by the fiction and the stylistic tendencies of the particular genre or author that shape the text itself. There is no "character," only a pattern of actions described by an observer as a "character." (Hence my invocation of the "black box" a la Ranulph Glanville.) What has made the Stanislavski system of acting the default "best practice" in the generation of nuanced and "life-like" performance is that it is these very mechanisms that lie at its heart. That the "life" these performances are "like" reflects and conforms to social constraints that are different, but just as constructed, as earlier historical periods is a point well taken. This overlap between the actor's work and the mechanics of "everyday double contingency reduction" identified by Porr is precisely what makes the naturalistic theatre such a rich field for second-order observation.

« 8 » Landgraf critiques Søren Brier's commitment to softening the constructivist stance somewhat by embracing the "notion of reality that is thought to exist – and exist with definable qualities – independent of its (semiotic re)construction by an observer" (§6). Nevertheless, I remain sympathetic to Brier's position and persuaded by his argument that, without some degree of external invariance, the generation of an *eigen-object* would not be possible (Brier 2008: 105). It is enough to acknowledge that our access to this external environment is indirect and our descriptions of it the inferential constructions of closed systems. Even Ernst von Glasersfeld himself comes close to admitting as much when he speaks of the "obstacles" and "constraints" within our environment with which we "clash" even if this does not tell us "what the obstacles *are* or how a reality consisting of them might be structured" (Glasersfeld 1995: 73, italics in original). My embrace of Brier's softer position does not represent a capitulation to the tendency in the contemporary humanities, rightly identified by Landgraf, to embrace embodiment as a "foundational" position from which to fend off constructivist skepticism of various stripes. At the very heart of my proposal is the intention to interrogate the manner in which the *eigen-behaviors* Landgraf eloquently describes as "stability that on the level of interaction between nervous system and psychic system is the result of long term, evolutionary processes" (§8) are hijacked and repurposed to serve hegemonic power structures that rely, largely, on the symbolic arsenal within the system of communication. Even though, as Landgraf points out by way of Niklas Luhmann, "[a]nything we observe […] will have to draw on the operations of the system of communication to do so" (§7) Luhmann is also open to the idea that systems theoretic functional analysis

> "can clarify 'latent' structures and functions – that is, it can deal with relations that are not visible to the object system and perhaps cannot be made visible because the latency itself has a function." (Luhmann 1995: 56)

Luhmann goes on to point out that "[t]he more starkly a system is hierarchized, the more clearly do forms whose latent function is to protect hierarchy's need for latency stand out" and that

> "[c]onsciousness can undermine social latencies when it forces communication, and communication can sabotage psychic latencies, especially in the form of communication of a person who is defined as seeking to protect and conceal personal latencies." (ibid: 336f)

(Perhaps this is the manner in which systems boundaries are "turned inside out" in the passage from Louis Kauffman cited by Christy in §11). I count the undermining of such latencies among the cybersemiotic theatre's possibilities and certainly among the desires I have for its use.

Possibilities

« 9 » While I have great respect for Müller as an esteemed historian and theorist of cybernetics, I fear that, in this instance, he has completely misconstrued my main arguments. At no point in the target article or in the previous one that he mentions (Scholte 2015) do I make the claim that Stanislavski could have been influenced by cybernetics. When one looks at the dates of the two bodies of theory in question, as Müller has done, it is obviously a question of basic mathematics. Neither do I suggest that the early cyberneticians were influenced by Stanislavski. As Sweeting cogently observes,

> "the connections that [I have] developed between the two fields are significant for being not ones of application but, rather, overlap, where cybernetic processes are seen to be being enacted within an already established set of practices." (§1)

That Stanislavski's independently and previously developed theory of human behavior, completely absent the influence of what would become cybernetics, could so closely mirror the latter is precisely the point. As to Müller's question regarding the appropriateness of my redeployment of Glanville's black box as "epistemological tool" (§6), I am not sure what kind of issue observer-dependent distinctions, beginning with the naturalist author, through the naturalist actor and director and, finally those of "believability" and "meaningfulness" indicated by audiences of naturalistic theatre, would be if not epistemological; an issue with which the "other and older concepts" Müller suggests might "match better" have been inadequate in coping as the target article seeks to detail. It is also not my intention to "adopt (second-order) cybernetics in order to understand, to explain, let alone to develop [my] conception of theatre, i.e., Stanislavski's system" (§4) or to "replace" Stanislavski's original formulation with cybernetics. Rather, I am suggesting that, if the implicit cybernetics of the naturalistic theatre (including Stanislavski's approach to its performance) is made explicit, it can facilitate *new* uses of the naturalistic theatre as an instrument of cybernetic inquiry. But perhaps I have unwittingly created some of this confusion regarding my intentions myself by mingling second-order cybernetics with empirical experimental psychology as it has been traditionally practiced. This is an error that might be well avoided in light of the persuasive corrective offered by Richards and augmented by further analysis from Sweeting.

« 10 » Sweeting's citation of "Pickering's (2010) interpretation of British cybernetics as what he refers to as 'ontological theatre,' where ideas are explored through their staging in experimental devices or other forms of practice" (§4) is particularly apt vis-a-vis this research project. The autopoietic generation of a performance score by actor/characters engaging in what Stanislavski describes as goal-seeking behavior can be read as an analogue of Ross Ashby's multi-homeostat setup, which "stages for us a vision of the world in which fluid and dynamic entities evolve together in a decentered fashion exploring each other's properties in a performative back and forth dance of agency" (Pickering 2010: 106). The director of such a performance finds himself in a position similar to Ashby, whose

> "atomic knowledge of the individual components of his machines and their interconnections […] failed to translate into an ability to predict how aggregated assemblages of them would perform. Ashby just had to put the units together and see what they did." (ibid: 108)

(Remembering, of course, the circumscribed nature of "agency" thematized by Butler, mirrored by the fact that, while unpredictable, the behaviour of the multi-homeostat setup is, at bottom, deterministic on a mechanical level.) Sweeting's assertion that a cybernetic investigation of theatre might work together with related trends in cybernetic design research in "opening up a new avenue for exploring how cybernetics may be understood in terms of action rather than theory, and so as an active research tradition rather than one form of worldview amongst others" (§1) takes on an increased poignancy when contextualized by the experimental vision sketched by Richards and in conversation with Müller's theoretical reservations.

« 11 » Richards captures the spirit of my enterprise thus far as a proposal that "the theatre could provide a laboratory to experiment with ideas in SOC (second-order cybernetics) as a way to add some legitimacy and demonstrate value" but questions "the prospects for, and even the desirability of, pushing SOC into "mainstream" academia." He suggests instead that "SOC is distinguished by the new questions it asks, not by the answers it might supply to current questions" and that a more "appropriate form of experimentation" for the theatrical laboratory that I am proposing "may not be in the tradition of the scientific experiment, where empirical results are used to support or oppose pre-formulated hypotheses and theories;" but rather "in the form of 'playing' with the dynamics of interactions and relations" (§2). This is an appealing and accurate description of the kind of activity I most definitely have in mind; however, my current interest is less "in responding to questions about systems that do not yet exist, but which might be desirable if they did exist" (ibid) than it is in shedding light on pathologies in existing systems through cybernetic analysis of the processes of their representative embodiment and observation in naturalist drama; as well as potential pathologies in the processes themselves. (Of course, over the arc of an extended research project, the latter may well end up facilitating the former.) This is why I have confined my focus to more traditional theatrical forms and, thus far, not engaged with the experimental theatre lineage of Pask referred to by Sweeting (§4), as rich and valuable as it certainly is. Similarly, it has led me to side-step the excellent work on purely improvised performance by Keith Sawyer alluded to by Landgraf although the themes emergent across the commentaries have led me to reconsider him as an important potential source of insight into Landgraf and Porr's overlapping conceptions of improvised identity and "everyday double contingency reduction" discussed above. The same could be said of the "frame analysis" work of Erving Goffman and its foundational role in the rich literature of symbolic interactionism. Richards's admonishes that "SOC will become appreciated by the desirability of the consequences realized when people employ this way of thinking" (§9) and to just get on with "advance[ing] SOC by doing it" in "microworlds […] without the same constraints of convention and resources that limit the traditional sciences" (§11). This is a powerful and persuasive message that I am consid-

ering deeply as I ponder the next phase of this work. Such a micro-world may indeed be a more effective venue in which to "demonstrate the value of cybernetic thinking" (Upshot) while, perhaps, also avoiding some of the philosophical features of the current project that Müller finds disconcerting. But what might be sacrificed through disengaging with mainstream science in areas such as psychology, with its extensive literature on areas of cognition that have long been a part of cybernetic inquiry? Is the emergence of "a new science, one where the theatre and other arts could become a playground for research" such a long shot (Richards §9) that we should embrace and entrench our position on the margins with deliberate purpose? Perhaps. But another strand of cybernetics-inspired theory, touched upon by Christy, offers a language through which a long-ago called-for but as yet undeveloped science might be explored: Kenneth Boulding's eiconics or science of the image.

« 12 » Around the middle of the last century, two books emerged from Stanford's Center for Advanced Study in the Behavioral Sciences; the second, George Miller, Eugene Galanter and Karl Pribram's *Plans and the Structure of Behavior* (1960), offered as a direct and complementary response to the first, Boulding's *The Image* (1956). Boulding's book laid out his conception of the Image as "what [one] believe[s] to be true; [one's] subjective knowledge. It is this Image that largely governs [one's] behavior" (Boulding 1956: 7f). The Image is subject to the impact of "messages" that "consist of *information* in the sense that they are structured experiences. *The meaning of a message is the change which it produces in the image*" (ibid: 7, italics in original). Each individuals image is composed along the following dimensions:

- Spatial (location in space)
- Temporal (the stream of time and his place in it), relational (universe as a system of regularities)
- Personal (individual in the midst of persons, roles, and organizations)
- Value (scales of better or worse)
- Affectional/emotional (various items imbued with feeling or affect)
- Division of conscious/unconscious/subconscious, certainty or uncertainty/clarity or vagueness, reality or unreality (degree of correspondence between image and "outside")
- Public/private scale (degree shared by others) (ibid: 47).

The role of "value" as well as "fact" in this subjective knowledge structure is critical.:

> "At the gate of the image stands the value system demanding payment. This is as true of sensory messages as it is of symbolic messages. We now know that what used to be regarded as primary sense data are in fact highly learned interpretations. We see the world the way we see it because it pays us and has paid us to see it that way." (ibid: 50)

« 13 » Miller, Galanter, and Pribram pick up this conceptual thread and offer their notion of a "plan" as "any hierarchical process in the organism that can control the order in which a sequence of operations is to be performed" and link them to Boulding's Image in the following reciprocal manner.

> "Changes in the Images can be effected only by executing Plans for gathering, storing, or transforming information. Changes in the Plans can be effected only by information drawn from the Images." (Miller, Galanter & Pribram 1960: 18)

« 14 » Before concluding his book, Boulding calls "half tongue in cheek" for the founding of a new science he dubs "eiconics" to study "the formation of images, the impact of messages, and the consequences of images for behaviour" (Boulding 1956: 172). Such a science would be intrinsically designed to operate on a second-order level of analysis as "[w]e can examine consistency, coherence, survival value, stability, and organizing power in the image, because the image can investigate the image" (ibid: 174). If "a new science" in which "the theatre and other arts could become a playground for research" is to coalesce, the framework of eiconics developed over these two books might be a place from which to begin. Why Boulding chose a stance of only half-seriousness to float this conception can, of course, only be a matter of speculation. My guess is that it served as a pre-emptive defensive maneuver by a man who knew only too well how both radical and unformed his thinking was in this particular instance and who feared the derisive scorn of the mainstream academics with which he was more regularly in contact. Moving towards this endeavor from a position of artistic practice rather than economics, I consider myself fortunately less vulnerable to the kind of professional price Boulding might have been asked to pay and am unashamed in suggesting that we take up his proposal in earnest. (In fact, the authors of the second volume acknowledged that, traditionally, artists were the ones best equipped to carry out such a project (Miller Galanter & Pribram 1960: 214). The expansive vision in which this proposal is enveloped is articulately captured in Christy's commentary and I can add little to it other than my humility in the face of its vast aspirations. Whether this new field would retain the identifier of "science" or, as Boulding suggested was likely, opt for the descriptor "discipline" (Boulding 1956: 160–163) depends largely on the kinds of considerations raised by Richards. His idea that a cybersemiotic theatre laboratory that featured "the scheduling of a performance as an event among other events" (§2) might best facilitate fruitful experimentation is a practical suggestion worth considering. An event designed to "demonstrate the value of second-order cybernetic thinking" is likely to resemble something quite different from a typical evening at the theatre and may well benefit from built-in para-theatrical components to facilitate the type of second-order reflection desired. The development of such new paradigms is likely to require a Stafford-Beer-sized imagination. It is this reflection that brings me to my concluding thoughts.

« 15 » In closing, I would like to address Müller's suggestion that my project demonstrates a lack of "intellectual economy" and that, perhaps, I have been seduced by the beauty of a theory that does not survive Occam's Razor when applied in the manner that I am suggesting (§§4, 6) My response takes the form of two questions that I have found myself asking. What was the coalescence of cybernetics itself if not an exercise in stretching descriptions across domains and testing their elasticity, perhaps to the breaking point? And how has the field continued to grow and renew itself if not for the further stretching of "beautiful theories" beyond the margins of Occam's Razor from Stafford Beer's claim that an organization the size of a national government could be

modeled upon the human nervous system to Luhmann's endlessly controversial extension of the theory of autopoiesis into the realm of social systems to the audacity of Glanville's claim that science itself is in fact a restricted subset of design that is, in turn, the embodiment of cybernetics? It no way is my intent to place myself, and my endeavor, on the same level as these giants of our field. It is, rather, to point out that if my proposal entails some rather radical, perhaps questionable, extensions of existing concepts, it is largely because I have been so profoundly inspired by the daring cyberneticians of the past, who have cleared the intellectual space for entirely new forms of thinking. Certainly, this flair for theoretical eccentricity has fueled the recurrent accusation that cybernetics is not a genuine science but rather an elaborate system of analogies (Medina 2011: 11); but, perhaps, we should simply follow Richards's lead and happily surrender the scientific claim altogether. Either way, I am grateful that, in spite of his misgivings about its intellectual foundation, Müller feels that my "ongoing work could influence both theatre and research and might very well lead to lasting changes in concepts and theories as well" and that he "shall remain curious" (§7). To some, Beer's Cybersyn project might stand as a singularly spectacular quixotic failure. And yet many continue to sift through the detritus of its collapse for lessons that might still serve us well. In this spirit, I will endeavor to follow the admonition borrowed by Ranulph Glanville from Samuel Beckett: Try Again, Fail Again, Fail Better.

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