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Error Correction: Chilean Cybernetics and Chicago's Economists

Adrian Lahoud

Cybernetics is a specific way of conceiving the relation between information and government: It represented a way of bringing the epistemological and the ontological together in real time. The essay explores a paradigmatic case study in the evolution of this history: the audacious experiment in cybernetic management known as Project Cybersyn that was developed following Salvador Allende's ascension to power in Chile in 1970. In ideological terms, Allende's socialism and the violent doctrine of the Chicago School could not be more opposed. In another sense, however, Chilean cybernetics would serve as the prototype for a new form of governance that would finally award to the theories of the Chicago School a hegemonic control over global society.

Zero Latency

A great deal of time has been spent investigating, documenting and disputing an eleven year period in Chile from 1970–1981, encompassing the presidency of Salvador Allende and the dictatorship of Augusto Pinochet. Between the rise of the *Unidad Popular* and its overthrow by the military junta, brutal and notorious events took hold of Chile.¹ Though many of these events have remained ambiguous, obscured by trauma or lost in official dissimulation, over time the contours of history have become less confused. Beyond the coup, the involvement of the United States or even the subsequent transformation of the economy, a more comprehensive story of radical experimentation on the Chilean social body has emerged. At stake in the years of Allende's ascension to power and those that followed was nothing less than a Latin social laboratory. This laboratory was at once optimistic, sincere, naïve, and finally brutal.

Few experiments were as audacious or prophetic as Allende's cybernetic program Cybersyn. In this ambitious venture that lasted only two short years, a number of issues were raised that are still valid today. The program was first off an attempt by a national government to govern in real time at the scale of the entire national territory; second, the development of technical infrastructure that could track and shape fluctuations and changes in the Chilean economy; third, the conceptualization of a national political space along the lines of a business regulated by ideals drawn from corporate management; fourth, the invention of a scale and technique of government that begins at one end of the political spectrum but finds its ultimate conclusion at the very opposite.

The Chilean cybernetic experiment emerged in response to an urgent problem; the nationalization of the Chilean economy, especially the gathering together of disparate sites of productivity, resource extraction, and manufacturing, in addition to their re-integration within a state controlled economy. Allende had no desire to model Chile on the centrally planned economy of the Soviet Union, whose rigid hierarchical structure and lack of adaptive flexibility led to human and political crises.² In line with the mandate of a constitutionally elected socialist leader, Allende intended to devolve some central control to factories and grant workers increasing autonomy over their own labor. In doing so he hoped to hold in balance a series of opposing forces. On the one hand, the burden of redistribution that always falls to a centralized state, on the other, liberating the autopoietic force of the workers in their specialized sites of work.

1 *Unidad Popular (UP)* was a coalition of leftist parties that was formed in Chile in 1969.

2 GOSPLAN (Russian: *Gosudarstvenniy Komitet po Planirovaniyu*) or the State Planning Committee of the USSR was responsible for producing the five year economic plan for the Soviet Union, established in 1921 this centralized planning model was—despite the sophistication of the scientific models used—beset by problems of misreporting.

This complicated political calculus was made all the more difficult, because the stage upon which it took place introduced a further set of variables. The land surface of Chile had long acquired clear boundaries, fixed since the indigenous Mapuche uprisings (Petras and Morley 1978, 205). Chile is on average only 175 km wide, however it stretches for 4300 km in length. Moreover this elongated sliver of a nation is draped over an almost entirely mountainous terrain. If this engendered topographical complications, geologically Chile was abundantly rich. Breaking apart the monopolistic control of these resources would be critical to the viability of the new socialist economy. The problem that this young and idealistic government faced was how to create a new territorial scale of governance, one able to reform and eventually stabilize this complex spatial, and social landscape without relying on the precedents set by Soviet-style economies. In other words, how to reduce the adaptive threshold of political decision-making from the five-year model to something more immediate. This ambition would require developing an infrastructure for the exchange of information and transferring some of the decision-making capacity from the state to local actors.

Error Correction

On 4 September 1970, in an election awash with KGB and CIA money, the Unidad Popular headed by Salvador Allende won 32% of the vote in Chile. At this point, the Allende government believed it had six years to reform the Chilean economy. In line with its socialist democratic agenda, the government set out to nationalize its resource and finance sectors, and increase the efficiency of poorly performing industries (Medina 2006, 571). On 12 November 1971, little over a year since his government had come to power, President Salvador Allende received an unlikely guest. Stafford Beer is a cybernetician interested in the application of cybernetics to social systems. Beer had been invited to meet Allende by some Chilean scientists, who were interested in using his expertise on cybernetics to manage the newly nationalized industries.³ Cybernetic research evolved out of a problem: how to hit a fast moving plane with a weapon or, in military parlance, getting the ballistic and the target reach the same point in space at the same time. In response, researchers developed systems during World War II that were capable of tracking an enemy target by continually recalibrating a weapon to aim at the target's anticipated position, labeled a "feedback loop."

3 Especially Fernando Flores. What brought Flores and Beer together was not a shared political outlook per se but rather conceptual commonalities in scientific and conceptual thought that Flores recognized and Beer appreciated. These conceptual similarities drew Beer and Flores together despite their different cultural and political convictions. This connection was fostered by Beer's enthusiasm to apply cybernetic thinking, operations and research techniques to the domain of politics.

At MIT, on a miniscule military budget, Norbert Wiener led research into the mathematics and circuit boards that would eventually help to automate anti-aircraft fire. The achievement was as conceptual as it was technical, a re-imagining of the method by which a highly manoeuvrable fighter and its pilot could be fired at, with the projectile anticipating the future position of the target. The design of the mechanism had to reconcile meteorological factors such as wind with human cunning and be able to outsmart both. Wiener's research arrived at a time in which the idea of large-scale computational modelling had begun to take hold in many areas, almost exclusively evolving from the war effort and the attempt to build a systematic basis for strategic decision-making.

Though Wiener set the incalculability of nature against the calculus of man, what held the two together and ties cybernetics to the eighteenth Century is the fundamental commitment to understanding human populations as unknowable in ways that resonated with the unknowability of nature, and thus to open the possibility of re-inscribing human interaction either socially or economically within a specific kind of calculus, in this case, the mathematics of error correction (Delanda 1991). The cybernetic black box operated at the very limits of the known, the very idea of a cybernetic control mechanism—in that it posed the correlation between the behavior of an open system and the tracking of that system in terms of error correction—attempted to collapse the ontological *into* the epistemological with only the latency of the feedback loop to separate them (Galison 1994, 228).

In the only comprehensive history of Project Cybersyn, Edin Medina (2011) accounts for Chilean experiments with cybernetics in terms of the deep affinity between cyberneticians like Beer and the reformists around Allende, especially engineer and political ally Fernando Flores, who would be instrumental in inviting Beer to Chile. Beer's interest in cybernetics emerged out of his work in organizational management, especially what he perceived to be limitations in the adaptive potential of organizations dominated by rigid divisions of labor, poor channels of communication and constrained spaces for decision-making. In response to this, Beer experimented with organizational reforms that aimed to inject flexibility and a level of autonomy into decision-making, believing this would encourage employees to respond to a shifting work environment (Beer 1972). Looking back, Beer's commitment to a radical flexibility within the workforce is only one of a number of prophetic resonances that early cybernetic research has with neoliberalism. At the time, the promise of granting more autonomy to workers in terms of control and organization of factory productivity neatly coincided with the aims and aspirations of Allende's leftist government.

Symptomatology vs. Aetiology

For Beer, organizing bodies into groups, establishing protocols for decision-making, setting up channels for communication and allowing thresholds for change were all qualities embedded in the material of the organization in the same way developmental pathways were embedded in the organism. The plasticity of the organism with respect to its environment served as a model for the plasticity of the business in regards to its market and competitors, both being problems of adaptation to an external force field. Indeed, Beer originally viewed cybernetics as a hylomorphic critique of the *matter* of “business organization,” a faith in the *agency* of (organizational) matter whose adaptive, auto-poetic potential needed to be unlocked.

Much like a biological system, for Beer, the organization was made of matter that was alive with possibility, animated by internal drives, regulated by environmental constraints. In an attempt to mirror a certain conception of the firm, the diagram of the viable system model (VSM) broke down its structure into a series of linked parts hierarchically nested within each other. Organized according to a biological metaphor replete with nervous system, and sensory apparatus, the VSM was envisaged as a complex interlinking of perceptual and responsive mechanisms. These mechanisms could ensure that changes in the information environment would efficiently reach the appropriate decision-making node within the organizational structure. This sensitivity would encourage rapid and responsive decision-making and thus adaptation. Not that Beer conceived of all decisions as being equal: There would be no point burdening management with decisions that were not strategic in nature. Therefore the autonomy on which the firm's adaptation drew was not equally distributed. As one moved up the hierarchy of systems, the amount of overall strategic information about the entire firm expanded until the brain-like command structure was reached, which Beer imagined should look like a World War II operations room.

Significantly, the structure of the VSM was recursive. The same logic of feedback and response that structured each part also structured the larger component that these sub-parts were contained within, ad infinitum: Beer felt that such recursiveness was a necessary property of viable systems—they had to be nested inside one another “like so many Russian dolls or Chinese boxes” in a chain of embeddings “which descends to cells and molecules and ascends to the planet and its universe” (Pickering 2010, 250). For Beer, the question of scale was wholly commensurable across different problems, from a small cellular organism to an entire ecosystem, just as from a clerk's office to a production line. This crude characterization of the biological metaphor and its over-application would cause difficulties later—when techniques, which were successful in a business environment, were drawn into the management

of an entire nation's territory and its economic productivity. The reason for this recursive approach to scale in management clearly stems from a recursive understanding of scale within the organism—one serving as the rule and the model for the other. Moreover, it is possible to speculate that what permitted Beer to extend this diagram of organization into non-biological domains was a sense that each part of this system operated like a black box. Repeating a characteristic and fateful cybernetic concern with symptomatology rather than aetiology first formulated by Weiner, the inner *workings* of the thing being modeled did not matter: All one had to do, was to track the inputs and outputs—causes would hereafter be subordinated to effects—often with drastic consequences. The VSM was simply a diagram for *correlating* inputs and outputs among variously scaled black boxes, this seeming disregard for *mechanism* may have further allowed Beer to generalize its applicability across different situations. In fact, Beer was a staunch critic of the idea that the VSM could “contain” information the way a box could contain goods, this would be tantamount to splitting form from content, reverting to a hylomorphic conception of organizational matter.

What Beer misses, ironically, is that the representations may not have been held or contained *within* his system as a kind of cargo or payload; instead they were embodied in the system's very structure. Though there were no “symbolic or representational elements” or internal models in the black boxes that made up the VSM, it was not possible to say that the VSM was wholly plastic and adaptable. It had parts—and though these parts were indeed black boxes, the diagram of information flow that linked the various inputs and outputs together was quite immune from the adaptive process. There was a clear model at work, just not at the scale Beer was focused on.

The National Nervous System

The eventual deployment of a socialized cybernetic network in Chile exceeds any precedent by orders of magnitude. Known variously as Proyecto Synco, el Sistema Synco, or Cybersyn, the fruition of Allende's control fantasy and Beer's techno-optimism was a nationwide system of monitoring, reporting, and feedback based on cybernetic principals. Hundreds of telex machines were installed in newly nationalized factories all over Chile and employed for sending data on everything from production volumes to employee absence rates back to the central command room in Santiago. The backbone was Jay Forester's DYNAMO compiler, fresh from use in the Club of Rome Report titled *The Limits of Growth*, where it had also been used to model large-scale economic and demographic tendencies.

For Beer and enthusiastic colleagues like the biologist Francisco Varela, who would go on to put forward a theory of autopoiesis with Humberto Maturana,

a cybernetic model of socio-economic management equaled national stability. Provided inputs could reliably be fed into the control center, social and economic effects could be generated in response to any circumstance. The nation could be tuned, and Beer knew how to turn the dials. Sitting on molded plastic chairs in the Cybersyn control center, technicians took live signals from Chilean factories up and down the coast and in return used them to manipulate and adjust the Chilean economy in real time. Like stimulated nerve endings firing electrical charges, information from hundreds of small social and economic events across the nation flowed down telegraph wires into the central control room; the national nervous system had been re-scaled to cover the territory, and had seemingly acquired a cybernetic brain.

In the hexagonal control room in Santiago, television screens would present real-time information to a planning committee. This organization of information spatialized the real-time data processing system, collapsing the vast distances of Chile's topography and its widely distributed centers of production to a single point in space. From this position, it would be possible to literally *see through* the walls of the room such that the entire scale of the territory would be co-present and available for action simultaneously. The ontological and the epistemic promised to merge on the surface of the screen. This control room scenario is now commonplace, indeed contemporary logistics, shipping, and freight systems would be unthinkable without it, and though it had certain precedents during World War II, especially in the spread of war rooms built around the world, the televisual nature of the system together with its peace-time operation and economic domain made Cybersyn unique.

Additionally, what made Cybersyn more unique, however, was that each node in the network would be granted a certain operational autonomy. Factories could communicate with each other as well as with the central command room. This image of freely flowing information able to traffic horizontally between nodes and vertically through a command structure was absolutely central to Beer's conception of Cybersyn. Both Beer and Allende believed this was what would lend the system its curious powers of adaptive strength: By re-empowering local decision-makers, Cybersyn took Beer's interest in organizational management and socialized it. In a moment of incredible optimism, the core group of researchers working with Beer seemed on the cusp of securing the shifting coordinates of Chile's social and economic environment.

Replete in both Beer's own writing and that of the historians who take up the Cybersyn project is a conception of so-called *bottom up* decision-making as inherently democratic, in contradistinction to *top down* decision-making processes, which are seen as coercive. A well-known anecdote is worth repeating here, since it reveals the naivety of the political position behind this equation of upward traffic and democracy, which both Medina (2011) and Pickering (2010) take up without qualification.

Beer is invited to the Presidential Palace on 12 November 1971. He is tasked with describing his proposal for the nationwide cybernetic system to the newly elected president. Beer slowly takes Allende through the nested structure of the viable system model, carefully explaining the equivalence of factories to limbs, and the feedback loops to an organic sensory apparatus. Step by step he elucidates, moving through the hierarchy of levels and explicating the autonomy granted to decision-makers at each point, as well as the flexibility this system could guarantee. Finally, Beer reaches the apex of his metaphorical diagram, the brain or control center. Just as he is about to reveal this point to be the seat of the president, Beer is interrupted by Allende, who exclaims: “at last . . . *el pueblo*”—the people.

Blind Spot

Allende implicitly understood the difference between representative democracy and business management. For Beer, the ability to make decisions had a simple and direct correlation to freedom regardless of the decision being made, a freedom that only ever trafficked in a literal register: either democratically bottom to top, or autocratically from top to bottom. Furthermore, in committing to a wholly rational idea of decision-making, in which an actor is presumed to make the best decision if he or she is provided with the right information, Beer aligns himself with a technocratic vision of society, in which decision-making is reduced to a question of expertise. However, the foregrounding of expertise—a space where “competent information is free to act” as Beer put it—as a principal of decision-making mystifies the political dimension of decision-making (Medina 2011, 33). In this sense it is not a question of moral value, but of the proper structural position of expertise vis-à-vis politics.

Just like any organism, Cybersyn’s lifeworld was shaped by its sensory apparatus. In order for something to count as an input, the system had to *see* it in order to *recognize* it. This recalls Jakob von Uexküll’s concept of the *Umwelt* in which each organism has a world of its own compromised only of the dimensions present to its sensory apparatus. Despite the abundant and profuse continuity of the natural environment, each organism gives birth to a world by selecting only a few important markers within this space. For the organism, everything else simply does not exist. Deleuze and Guattari’s (1987) and also Agamben’s (2004) often cited use of the tick is drawn from von Uexküll and serves as an extreme example of the point. The tick’s lifeworld is contracted down to three stimuli: light, smell, and touch (Uexküll 2010). Light draws the tick to the tip of a tree branch, smell allows it to detect the passage of a host below and drop onto its back, touch to locate bare skin, so that it could burrow. As Canguilhem writes:

A meaning, from the biological and psychological point of view, is an appreciation of values in relation to a need. And a need is, for whoever feels it and lives it, an irreducible system of reference, and for that reason it is absolute. (2001, 7)

If the world is an accumulation of signals, inputs and outputs than Beer and Uexküll are in close proximity. Each cybernetic apparatus, whether the anti-aircraft battery or the viable system model, individuates a specific mesh through which the continuity of the world passes. The individuation of the epistemic and the ontological—in that it is a co-individuation—binds certain features of the world to knowledge apparatus in a partial and limited way, in other words at a specific scale. Gilbert Simondon's critique of cybernetics is worth repeating here. What matters in a system is not the communication between pre-given receivers and whether one or another node in the relay of communication is sensitive enough to register a change in its environment.⁴ Instead, it is the genesis of the senders and receivers themselves that is of importance, since this forms the genetic condition of possibility for communication *to exist as communication*. In the genesis of the communicators perceptual apparatus is the genesis of a specific lifeworld (Simondon 2009).

In this regard, what matters is the individuation of Cybersyn and the VSM diagram that it carries inside—not the modulation of the signals between the parts, or their adaptation within a functional bandwidth. At precisely the

- 4 “Information is therefore a primer for individuation; it is a *demand for individuation*, for the passage from a metastable system to a stable system; it is never a given thing. There is no unity and no identity of information, because information is not a *term*; it supposes the tension of a system of being in order to receive it adequately. Information can only be inherent to a problematic; it is *that by which the incompatibility of the non-resolved system becomes an organizing dimension in the resolution*; information supposes a phase *change of a system*, because it supposes an initial preindividual state that individuates itself according to the discovered organization. Information is the formula of individuation, a formula that cannot exist prior to this individuation. An information can be said to always be in the present, current, because it is the direction [*sens*] according to which a system individuates itself” (Simondon 2009, 10). Also: “According to Simondon, cybernetics had failed to go in this direction. Wiener had the “huge merit” to have started the first inductive investigation into machines and established cybernetics as a comprehensive, interdisciplinary research project. But, following Simondon, he had failed to define his research object in an appropriate manner. Cybernetics only focused on a specific type of machines, i.e., machines with feedback mechanisms. More generally, Simondon stated, “Right from the start, [Cybernetics] has accepted what all theory of technology must refuse: a classification of technological objects conducted by means of established criteria and following genera and species.” For Simondon, the problem did not consist in applying biological procedures to technology (as we will see, he himself made use of such procedures). His point was that Wiener had made the wrong choice relying on a quasi-Linnaean, stable classification. What Simondon was after was a dynamic theory of technology, i.e., a theory that would grasp technological objects in their development and their relation to inner and outer milieus or *Umwelten*. In other words, Simondon did not want to start another botany of machines, he was interested in their individuation, development and evolution” (Schmidgen 2004, 13).

same moment that the abstract diagram of the system is articulated and the parts have been prescribed their range of functionalities and sensitivities, two things are produced. Firstly, a life world. This contains all the things that can be recognized and detected by the system. Secondly, a contrast space or blind spot, a remainder, which—from the point of view of the life world—has no existence whatsoever. Cybersyn had an *Umwelt* all of its own, and this *Umwelt* was wholly determined by those things Allende's economists and Beer's cyberneticians took to be of value between 1972–1973.

By attempting to equate an economic and social formation with a series of indicators in a feedback loop, Chile's cybernetic experiment over-extended quantitative techniques into a qualitative domain. The equations, diagrams, circuit boards, telex machines and screens that made up the "body" of this national cybernetic system, attempted to make a society and its economy knowable through calculus, a series of variable quantities that could be tuned and calibrated. The question that arises for any such system is how to count. Where is one to draw the line, that difficult threshold between the calculable and the incalculable, the field of vision and the blind spot?

This question would become paramount for the Allende government on 11 September 1973. Certainly Cybersyn was never designed to halt a coup attempt, nor can the overthrow of Allende's government be said to have eventuated by a failure in this unique experiment. Instead, the line followed here is that the ethos hardwired into the telex machines, control rooms and software encapsulated an idea of social equilibrium—and the coup in all its murderous force represented another kind of politics, one that would never be content to operate within an exiting set of structures. Rather, it demanded that the rules themselves—the very structure of decision-making—enter into the stakes of the political bargain. That this was articulated by a military junta in this case is coincidental, since what was and is at stake is not merely the adaptation of systems parts, it the possibility of radically transforming the system that recognises something as part of it in the first place.

Sleeping Dogs

In the introduction to his lecture at the College de France on 10 January 1979, Michel Foucault opened with a joke. He abbreviated Freud's quotation of Virgil's *Aeneid* which reads, "*flectere si nequeo superos, Acheronta movebo*" or "if I cannot deflect the will of Heaven, I shall move Hell" which Foucault renders simply as, "*Acheronta movebo*."⁵ Freud used the line as the epigraph to the *Interpretation of Dreams*, where it is meant to refer to the upward movement of repressed content within the psyche. Foucault humorously counter-

5 Alternatively translated in the text accompanying the lecture as "If I cannot bend the Higher Powers, I will move the infernal regions."

poses Freud's dictum with a quote from Britain's first prime minister, Robert Walpole, who once stated: "*Quieta non movere*" which Foucault translates idiomatically as "Let sleeping dogs lie" (2010). It is certain that the distance between the two quotes is not as great as Foucault implies, and although Foucault does not propose a psychoanalytic reading of the history of the eighteenth century—the extent to which subterranean problems rise up to lend sense to the details of history is a methodological given within his work.

"Let sleeping dogs lie", what is intended with this statement? Undoubtedly, it is a council of prudence, a description of government as a game of minimal contact. Foucault traces the evolution of liberalism as a specific refinement of the *raison d'état*, especially through the period in which the market moves from being a site of redistributive justice in which buyers must be protected against fraud to a site of verification, and thus the production of a kind of truth. The market can only operate as a site of truth production once it expresses a natural or true price. For this reason, any intervention by government threatens to jeopardize this natural state of affairs. Thus, government must adopt a continual reflective stance formed between the twin limits of a minimum and maximum contact. As Foucault states,

When you allow the market to function by itself according to its nature, according to its natural truth, if you like, it permits the formation of a certain price which will be called metaphorically, the true price, but which no longer has any connotations of justice. It is a price that fluctuates around the value of the product. (Foucault 2010, 31)

The genesis of liberalism as a specific technique of governance can be traced to the problem posed by populations of a certain scale. At its core, liberalism attempts to establish a naturalized state of interaction between individuals, especially with regards to economic transactions and the idea that within the emergent sum of these interactions exists a wholly natural value—price. Only by *securing* the contingent interplay of these actors within the population—and here the term security is meant in its regulatory, policing sense since this freedom depends on certain limits—can the natural tendency of this system be expressed. This rationality accords to a complex interacting system—in this case the market, a privileged status as a site against which the principals of control and rectification can be measured.

For Foucault, the art of liberal governance is essentially self-reflective, a continual recalibration of techniques addressed to the milieu of a population in response to the various problems posed to it. The epistemic dimension to this project takes different forms that are united by the same reflective gesture in which truth appears through the frame of an empirical project measured against the truth supplied by the market. A number of deep affinities between the cybernetic dream in Latin America and the liberalism become apparent

at this stage, especially the inscription of the social body within the calculus of a complex emergent system. Later, it will be possible to say that in the case of the neoliberal experiments that began in Chile and eventually made their way to Eastern Europe and other parts of Latin America, this reflective gesture gives way to something more aggressive. This mutation does not faithfully reflect a reality that exists within an empirical project; instead, it violently brings a new market-oriented site of verification into being.

The convergence of cybernetic theory's game of epistemic capture with contemporary neoliberalism thus forms one chapter in the historical attempt to establish a rational basis for managing a population. It begins with naturalization of the market and takes up a wide range of empirical strategies whereby government begins to address itself to an "indefinite series of mobile elements," such as individuals, vehicles, goods, or dwellings. In other words, strategies where a quantifiable matrix of co-ordinates and trajectories become isolated, tracked, and regulated in time and space. The circulation of these elements will continually constitute new problems to which government must respond. It will do so by adopting a "transformable framework" that recalibrates around the provocations these problems pose (Foucault 2007).

Because characteristics such as health, crime, and poverty emerge from a terrain that is necessarily contingent and open, the practices of government take on a reflective form. Though populations exhibit tendencies that cannot be simply be directed at a goal, they can nonetheless be tracked and modulated within a bandwidth of possible variation. In some sense this marks the critical point of transformation; power will no longer touch its object directly, instead it will address the space in which the object exists as a possibility. Phrased differently, power will begin to address the lifeworld, or milieu.⁶

Under this cybernetic ethos, transformation is not directed towards a distant goal that is known in advance. Instead, it follows immanent tendencies, guiding them forward—but also giving them space to evolve. The city or territory is understood here as a contingent, self-regulating resource that requires ongoing management. The goal of this management is to secure a natural equilibrium and keep emergent forces in balance. In one way, the Latin American experiment in cybernetics is the first moment when this liberal diagram goes live, the moment when "the medium of an action and the element in which it circulates" (Foucault 2007, 32) promises to come under real-time control. However, as Pinochet would eventually show in the case of Chile, the properly

6 "The milieu is a set of natural givens—rivers, marshes, hills—and a set of artificial givens—an agglomeration of individuals, of houses etc. The milieu is a certain number of combined, overall effects, bearing on all who live in it. It is an element in which a circular link is produced between effects and causes, since an effect from one point of view will be a cause from another" (Foucault 2007).

political question is not how the system operates (i.e., how can we refine it, make more integrated, more complete, more coextensive with the world?) but rather what *counts* as part of the system. The political dimension of any system is its blind spot, the part it cannot recognize, as Rancière writes in different context: “the part with no part” (2004).

The Cybernetic Ethos

Freud’s dictum regarding the return of the repressed suggests a subconscious that never sleeps. In the Chilean episode, the historical subconscious underwent many movements of its own; socialist dreams were soon replaced by neoliberal ones. Just as in dreams, where unrelated facts can suddenly become juxtaposed without logical relation, three times in short succession Chile became a space of extreme experiment: first with constitutional socialism, second with cybernetic management, and finally with the Chicago school of economics. For decades, this Latin American laboratory painfully rehearsed social and economic ideas years before they became accepted in the rest of the world. If the socialist origin of cybernetic management is a source of pride for many advocates, its ultimate conclusion as the deep structure of neoliberalism is not. Valdes writes:

From 1970–1973, the Allende government implemented its “anti-imperialist, anti-oligarchical and anti-monopolistic” program, deciding to nationalize the financial and productive sectors of Chile, to expropriate large chunks of rural property, and to replace the market with far-reaching price control. From 1974–1978, the military regime of General Pinochet developed a radical economic liberalization program based on the indiscriminate use of market mechanisms, the dismantling and reduction of the state, regulation of the financial sector, and a discourse that ascribed to market forces the ability to solve practically any problem in society. One extreme of radical ideology was followed by its opposite. Chilean society was twice called upon to begin its history from scratch. (Valdes 1995, 7)

Though their means and purposes point in opposite directions, and while it would be ridiculous to equate Allende’s constitutional socialism and its wholly legitimate rise to government with Pinochet’s violent coup and years of terror, is there not—despite the aforementioned differences—a deep affinity between the two? In the fervor to shape a new Chilean subject, to disavow the past, to pursue growth, and set in place “irreversible change” both the military junta and the left-wing socialists share surprising similarities. As such: “the coup cannot be reduced to a particular time-bound event but must be seen as a *process*, i.e., as a particular constellation of social and political forces moving together and apart over historical time” (Petras and Morley 1978).

The Cybersyn experiment only makes sense against this changing historical background. In the very attempt to constitute an environment as a resource for adaptation, this techno-social assemblage was disposed to draw on its context. As soon as it was activated, as soon as it began to work, as soon as it was plugged into a concrete historical situation it began to inflect that situation's politics, to redraw the contours of the problem in its own image.

For this reason, the technology could never embody a specific ideological payload, its status as emancipatory, its surveillance function, its "left" or "right" orientation was always dependent on the environmental "input" it drew upon. The relay the machine was installed within was permanently unstable. Called on to regulate economic activity, manage workers' disputes and form an affective loop between government and governed—its model of freedom was itself tangled in a network of resistances wholly immanent to the field in which it took shape. This environment made for an unstable ground, always threatening to give way beneath the cybernetic machine. This why it could move from one political spectrum to the other and then back again. It is also why the same technique could infuse supposedly radically different ideologies. Its autonomy was total, the machine just kept on working.

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