Growth and function: a viral research program for next organisations

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Abstract: This article is the prototype of a virus that recodes economy biased decision programs of capitalist organisations. To bypass the notorious firewalls of capitalism we developed a program that works as anti-capitalist malware program without being one. This is achieved by changing the programming language from moral code to functional differentiation. If executed, our program: a) decodes growth as both economic and non-economic form; b) installs a multifunctional subroutine that enables organisations to modulate the frequencies with which they code decisions in both economic and non-economic media. The more decisions coded in non-economic media, the less important the economy, and the more alternatives to anti-/capitalist visions of de-/growth emerge.

Keywords: virus; organisational program; functional differentiation; social differentiation; degrowth; post-growth; next organisation.

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1 Introduction

Only few disagree that the one-dimensional growth obsession of capitalist societies is a global threat. The general view is that there are reasonable limits to growth (Meadows et al., 1972; Roth, 1987) that, once exceeded, indicate a need for degrowth (Reichel and Seeberg, 2010; O'Neill, 2012; Martinez-Alier, 2012; Romano, 2012; Ajami and Arch, 1990). However important claims for degrowth are to sharpen our awareness of the problems of growth, the crux remains that a sharper problem focus can only sharpen the problem, thus blurring the necessary vision of solutions. Attempts to organise escapes from economisation (Latouche, 2012; Fournier, 2008) are hence complicated by the concept of degrowth itself. In fact, "one could hardly find a more inadequate term to describe a project positively intent on ecological democracy and frugal abundance" [Latouche, (2012), p.77].

A repoliticisation of growth (Fournier, 2008; Latouche, 2012; Speth, 2012) therefore could be a valid strategy to achieve the overall goals of the degrowth movement. Established strategies of politicising growth, however, remain concerned with the problematisation, containment, and maybe even successful breaking of "the organizational dominance of the logic of growth" [Perey, (2014), p.219]. The present article is interested in a different form of repoliticisation of growth. Our aim is not to replace the one-dimensional growth obsession with an equally one-dimensional passion for degrowth. Rather, we wish to claim back growth for the political system, thus fundamentally challenging the idea that "growth is basically the 'vulgar' name for what Marx analysed as the endless accumulation of capital" [Latouche, (2012), p.76]. We will hence show that not all forms of growth are economic, and that growth is therefore not essentially alien to the goals of the degrowth movement. This view of growth, in fact, a brief excursion into theories of functional differentiation, is enough to show that growth can also be observed with regard to further functional systems such as art, religion, science, health, or education. As both functional differentiation and organisation are both key principles of modernity (Leydesdorff, 2002; Vanderstraeten, 2005; Brier, 2006; Kissling-Naf, 2009; Kjaer, 2010; Bergthaller and Schinko, 2011) and conceptual strong points of social systems theory, we confidently draw on Niklas Luhmann's theory of functional differentiation (Luhmann, 1977, 1997; Luhmann et al., 1982) not only to develop a research program in the organisation of a post-growth economy, but also to show how current organisations might be reprogrammed accordingly. We will hence introduce organisations as communicative decision machines (Nassehi, 2005; Schoeneborn, 2011; Seidl and Becker, 2006) and focus organisational programs as gateways for our intended hacking of the economic growth decision machines of capitalism. As anti-detection routines are key components of any computer virus [Ludwig, (1991), p.16f], so too will we have to camouflage our viral research program for deconomised organisations. The hack value of the present article hence is in the prototyping of an anti-capitalist organisational malware program that is not detected as such; and the best way to achieve this aim is to code a program that functions as an anti-capitalist program without being one.

2   Code: paradox and virus

The challenge of designing a particularly paradoxical form of virus is facilitated by the circumstance that viruses are themselves considered particularly paradoxical forms. In biology, viruses are referred to as 'organisms at the edge of life' [Rybicki, (1990), p.182] which literally transcend the very dividing lines that define life as autopoietic systems (Viskovatoff, 1999). The observation that viruses challenge life-forms, however, is paradoxical insofar as the observation of a virus implies the observation of life. In fact, the observation of a virus only comes about if we observe an oscillating non-/life-form in the medium of life, and only if we observe this non-/life-form to have an undesirable impact on its medium. Set aside this negative impact, things suddenly appear much clearer: now we are just talking about a DNA sequence, i.e., a code sequence that can consistently be attributed to life. The observation of a virus therefore refers less to the concrete code sequence than to its observer, which is a life form; and as observers themselves are specific deparadoxifications of the general paradox of observation (Luhmann, 1995; Andersen, 2003b), the ultimately completely paradoxical observation of a virus points at the paradox of observation itself.

This ultimate paradox is in the observation that the observation of any form both indicates this form and distinguishes this form from everything else. Every form of observation therefore implies the distinction between distinction and indication [Kauffman, (1987), p.58], and every observed form therefore *is* the distinction between the distinction and the distinguished. Luhmann (1999, p.49) gives the example that "(a) sign is the difference between the sign and the signified (…) or likewise: a system is the difference between system and environment". Accordingly, every form, including the form of observation, is the distinction between this form and the medium in which it is drawn. Form theoretical theories of observation therefore often start from the imagination of an unmarked space (Spencer Brown, 1979; Luhmann, 1993, 1995), in which forms appear as differences that make a difference (Bateson, 1972). Like a blank sheet of paper becomes this article (and not a manifesto) not before the first lines are being printed, it is the distinctions drawn that they themselves create the world in which they exist. And the observation of this world remains a paradoxical operation, as it is still impossible to simultaneously observe both the distinctions and the medium in which they are drawn.

Once accepted, the observation of the paradox of observation allows for the observation that every paradox can be solved in a larger paradox. The aim of a paradoxological observation of paradoxes is therefore not in their resolution, but rather in finding strategies to 'navigate the perceived tension' [Sharma and Good, (2013), p.97; Martini et al., 2013]. The most straightforward way to encounter paradoxes is then to engage in the paradox of deparadoxification (Luhmann, 1995; Andersen, 2003b). The first basic form of deparadoxification is *factual* deparadoxification. In observing a form, we may distinguish the form from its medium and focus the form. If we are then interested in observing the medium in which the form is drawn; we will focus the medium, thus henceforth observing it as form. The only thing needed for this crossing is time. In involving time, the factual both-and-paradox is actually solved at the cost of a *temporal* one, which is now in the sequencing of a concurrence. This sequencing paradox can then be solved by *social* deparadoxification, i.e., by the observation that different sequences of observational operations constitute different observers, which then endlessly calls for further social deparadoxification as the mutual observation of a multitude of observers eventually turns any world into a multiverse of observations.

The strategy proposed in this article is inevitably one that combines factual and temporal deparadoxification. The observer created by this manoeuvre is the simple observation program represented in Table 1:

Table 1   Formulas of form, code, and medium (own table)

	Form	*Code*	*Medium*
Form	–	1	1
Code	1	–	0
Medium	1	0	–

The first line of Table 1 refers to the paradoxical observation of a form as the distinction between this form and the medium in which it is drawn. A form hence is its own distinction and the medium created by this distinction. The trick is then that to observe a form we need to attribute both form and medium to the form. A form is therefore the form of the form and the medium of the form. To better observe the distinction between the form and the form of the form, in the following, the form of the form will be indicated as code[1]. We hence define

1   *code* as the observation of a form without its medium

2   *medium* as the observation of a form without its code

3   *form* as the paradox of the concurrent observation of both code and medium.

This observation program has already been helpful in navigating the above paradox of life, in the context of which we found that the observation of a virus refers to the observation of a code sequence in the medium of life. The observation of weak points of organisations, however, refers to the observation of organisms that operate in a different medium. To identify code sequences that have similar impact on organisations as traditional viruses have on biological or technological systems, we therefore need to look into the DNA of a particular form of social systems.

3   Search: organisation and program

The organisations we intend to hack are communicative systems (Luhmann, 2003; Nassehi, 2005; Seidl and Becker, 2006; Schoeneborn, 2011). We consequently do not attack humans, people, or actors. We do not intervene in groups or interactions. Our only target is decisions because 'organisations consist of decisions' [Nassehi, (2005), p.186], and nothing but decisions.

Decisions are specific forms of communication. Decision communication is hence different from communication about decisions (Luhmann, 2003) as much as it is not about interaction 'in' organisation. Rather, we observe decision whenever communication communicates its own contingency (Andersen, 2003b), because decision communication necessarily implies the communication of alternatives. The form decision consequently refers to the actualisation of decision in the medium of its potential alternatives. Decision systems emerge because the more decisions made the more alternatives evolve, and the more alternatives are there, the less justified is a decision. Decision communication thus creates an inherent need for further decision

communication. Once made, however, a decision can only be replaced by another decision because the deconstruction of a decision can itself be taken for a decision. Moreover, a made decision can guide further decisions. The insecurity involved in the contingent nature of decision-making can hence be absorbed if later decisions are observed to follow from earlier ones. This chaining of principally contingent decisions soon creates eigen logical structures, which are soon as stable as those in the case of music, where a sequence of only three initial tones is enough to define the mode of a melody.

A precedent decision can hence function as decision premise for subsequent decision. Decision premises thus help with navigating the above paradoxes of decision-making. Luhmann (2003, 2005) distinguishes four forms of decision premises: personnel, communication channels, programs, and organisational culture. While personnel refers to membership decisions such as recruitment or the placement of right persons on the right positions, communication channels refer to the question of which positions are included in which information flows. Decision programs decide on whether decisions are made properly. Organisational culture refers to undecidable decision premises such as foundational decisions or organisational routines.

The contact point of our virological approach to organisational change is clearly in the organisational programs, two of which are commonly distinguished: conditional programs define by which decision an organisation is to react to a certain events, whereas goal programs decide on desirable goals as well as the decisions needed to achieve them. As a virus is not necessarily destructive, we suggest that, for a start, we leave intact the basic program architecture of organisational systems and rather focus on the programming language in which decision programs are written.

4   Copy: the Trojan of diversity

Organisation is a communicative form. Communication is coded as language [Luhmann and Barrett, (2012), p.132]. Organisation can therefore be decoded as communication that recodes language in terms of non-/decision. The observation of growth-focused or capitalist organisations then indicates that organised communication features certain biases to particular forms of language. The key question therefore is which codes make these sub-forms of language come about. As language codes are distinctions drawn in a social medium, to answer this question we have to be concerned with social differentiation.

Table 2   Social differentiation

| | | Equal | |
		+	−
Similar	+	Segmentation (families, tribes, nations, etc.)	Centralisation (civilisations, empires, etc.)
	−	Functional differentiation (economy, science, art, etc.)	Stratification (castes, estates, classes, etc.)

Source: Slightly modified from Roth (2014a, p.442)

Social differentiation refers to intrasystem processes of subsystem formation (Luhmann, 1977, 1990). The first known subsystems within society were similar and coequal

segments such as families, clans, and tribes (cf., Table 2). Later, some segments started to exert larger influence on surrounding segments than others, which turned them into centres and the others into peripheries. Although not necessarily an advantage, this *centralisation* has often been the basis for social *stratification*. Stratification is characterised by the distinction of neither similar nor equal strata such as castes, estates, or classes. Notwithstanding a still strong importance of hierarchies, the *functional differentiation* of dissimilar and equal subsystems such as the political system, the economy, science, art, religion, or the mass media system is said to be the dominant form of differentiation in modern societies (Luhmann, 1977; Leydesdorff, 2002; Beck et al., 2003; Vanderstraeten, 2005; Brier, 2006; Lin and Lu, 2006; Chang et al., 2008; Dzisah and Etzkowitz, 2008; Bergthaller and Schinko, 2011; Jönhill, 2012).

As common as it is to find that different languages define different segments, so too do we know that there are linguistic borders between centres and peripheries, between different strata, and between the function systems of society. Each emergence of a new source code of language then again illustrates that codes are duplication rules: they bisect communication without halving it. Communication is not overwritten but translated into the binary form of the code and thus remains intact. One and the same communication can hence be coded in terms of segmentation, centralisation, stratification, and functional differentiation. The observation of organisation in the medium of social differentiation then refers to the observation that forms of social differentiation can be recoded as decision. Concrete forms of organisation are hence distinguished and defined by which forms they recode decisions. This is to say that to observe organisations in plural we need to observe socially differentiated decision programs, i.e., socially coded decisions on which decisions are relevant decisions.

The observation that contemporary organisations are focused too much on growth thus points at a perceived problem with the coding of organisational programs. Yet, defined as the distinction of more versus less or $(+/-)$, respectively [Luhmann and Barrett, (2013), p.316], the form growth is obviously not problematic in itself. To observe the problems of growth as identified by the degrowth movement, we need to moralise growth, i.e., observe the code of growth in the medium of the moral, which is coded as the distinction of good and bad (Luhmann, 1992). The moralisation of growth is then a particularly instructive case of moralisation because the symbol for quantitative growth $(+)$ may also be used to indicate moral quality, with the same being true for the negative sides of the codes (cf., Table 3).

Table 3   The moralisation of growth

		The code of the moral	
		+	−
The code of growth	+	+ = +	+ = −
	−	− = +	− = −

The degrowth movement is true in warning of the semiotic short circuit that growth is inherently positive $(+=+)$ and that no growth is essentially bad $(- = -)$. However, it is false to assume that a simple inversion of the poles could fix the problem $(- = +$ and $+ = -)$, first, because either form of moralisation is perfectly arbitrary and, second, because there definitely are forms of growth that are considered positive even by the degrowth movement[2]. That said we find that the problem is not in growth itself, but rather in the

fact that growth is naturally considered as essentially economic as it is assumed to be essential to the economy. If seen from this angle, moralisations of growth are actually moralisations of the economy. The problem involved in attempts to moralise the economy, however, is in the circumstance that the economy is a form of functional differentiation, and that functional differentiation represents a tool to cancel moralisation (Ward, 2006). Moreover, as systems of decision, organisations are virtually built on Heinz von Foerster's (1992, p.14) fundamental decision paradox: "only those questions that are in principle undecidable, we can decide". The point is indeed that "decisions are always and only due when values pose conflicting demands (because if not, the decision would already be decided)" [Luhmann, (2008), p.29]. Attempts to reprogram decision machines by codes other than decisions therefore challenge the specific principle of organisation rather than the principles of specific organisations. For these two reasons, the moralisation of economised or capitalist decision programs is an option only for brute force or side channel attacks on functionally differentiated organisations.

As particularly the most alternative anti-capitalists are not interested in a life without organisation, decision, and alternatives, the alternative for reprogramming capitalist organisations is to provide organisations with more of their medium of record: alternatives. This strategy is, to a certain extent, in line with "a central trope of critical management and organizational studies" [Letiche, (2010), p.262]: the discovery of organisational polyphony (Hazen, 1993, 1994, 2006; Kronberger et al., 2006, 2007; Boje, 1995, 2008) has indeed opened up new horizons of alternatives, including not least alternative views of organisation. Yet, this open space remains narrow insofar as the field is preoccupied with observations of diversity resulting from encounters of segments and strata, with the dominance of this discursive focus silencing voices that report on polyphony in terms of functional differentiation. This widespread neglect of the key principle of modern societies is a fair reason for recalling that "polyphonic organization means listening carefully to the voices of others and mediating between different language games" [Clegg et al., (2005), p.335].

Organisations are observed to navigate the codes of functional differentiation in two different ways. In the first case, organisational programs are observed to be multi-referent, i.e., capable of interpreting the code of all function systems as long as it can be translated in the code of 'their' dominant system. In this sense, a bank may sponsor a sport event or run an internal health program as long as there is a corresponding return on investment. Or we may observe organisations programmed in the language of an economic theology of organisation, in which "religion is as strong as ever, but has now become integrated within capitalist modes of organization" [Sørensen et al., (2012), p.274]. For Niels Åkerstrøm Andersen (2003a, p.164), however, these are examples of the observation of homophonic organisation: "a homophonic organization is one that has a primary codification, which regulates the relevance of codifications", whereas "an organisation is polyphonic when it is connected to several function systems without a predefined primary function system" (p.167). Andersen's concept has recently been radicalised in terms of the observation of a trend to organisational heterophony, which defines organisations for which all function systems are equally important (Andersen, 2003a, 2000; Andersen and Born, 2007). According to the first concept, organisations appear rather unable to change their prime function system orientation, whereas both versions of the second concept treat this flexibility as a special case of organisation. A third idea is to observe all organisations as multifunctional (Roth, 2014b), a proposition

that turns specific function system biases featured by specific organisations from axioms or standard cases into a research field.

A functional turn in diversity research allows for the observation that a reprogramming of capitalist organisations is less about the observation of less economic growth than about a growing interest in the 'other' functions systems, namely the political system, science, art, religion, law, sport, health, education, and the mass media system. If we observe the code of growth not in the medium of the economy, but rather in the medium of functional differentiation, then we see that the economy is only one out of probably ten function systems, and therefore does not necessarily deserve more attention than the other nine function systems. There is hence no self-evident reason why organisations and societies should follow either capitalists and anti-capitalists or advocates of degrowth, respectively, in their positive or negative moralisations of the economy as the supposedly most important (problem) system. There is, however, strong evidence that anti-capitalist attacks on capitalism systematically fail to pass through capitalisms notorious firewall (Boltanski and Chiapello, 2005; Bousquet, 2002). Capitalism is indeed hyper-adaptive and capable of growing with anti-capitalist criticism, which is true precisely because anti-capitalism is itself part of capitalisms firewall, because anti-capitalist programs are coded in the language of capitalism, and because the observation of less economic growth remains an observation of economic growth. To avoid Tocqueville-paradoxical rebound effects of an ever-higher resolution gaze on problems of capitalism and economic growth, organisation for a post-growth economy must not be about the compilation of ever-longer moral source codes of *economic* conduct for brute force or side channel attacks on *economic* growth-fixated organisations. It must not be about the coding of more sophisticated *economic* (policy) programs for a more *economical* use of scarce resources. It must not be about an anti-*economic* culture. This hack must simply not be about a *more or less of the same*.

The alternative is simple and painful: to overcome capitalist growth fetishism, the organisations for a post-growth economy are to be recoded in line with the fact that the economy is only one among many function systems. Organisations of a post-growth economy are organisations in which economic de-/growth is only one out of many de-/growth functions. A graphic representation of the virus we prototype is the below picture of a program that could be referred to as a function system *equaliser* whose function can be either in bringing all function systems into baseline or in testing out different sounds (cf., Figure 1):

Figure 1   The function system equaliser
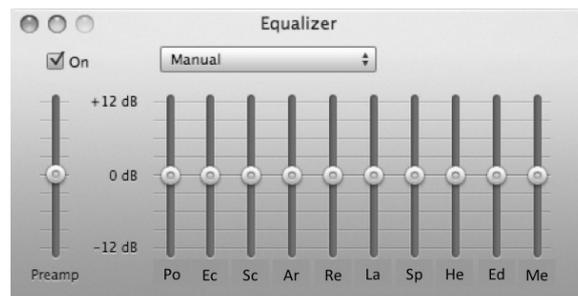
Note: Modified version of a screenshot of the OS X mountain lion equaliser gadget
    designed by Apple Inc.

Such an equaliser program allows for a reflexive and gamy (self-) programming, thus enabling organisations to reinvent themselves as multifunctional organisation. An adjusted version of this program would indeed fit nicely into the very popular management handbooks that are considered symptomatic for the development of capitalism (Johnsen, 2014). Unlike so many other forms of play [Butler et al., (2011), p.330], however, this function system equaliser is very unlikely to be instrumentalised for merely economic purposes, right because it is a tool to explore and experiment with modulating the frequencies of decisions coded in both economic and non-economic media, thus also allowing for the identification and modification of desired or undesired default configurations[3].

This equaliser virus looks more like an update for a post-modern diversity game called organisation than an anti-capitalist malware program, and that is a good thing. Precisely because it is not anti-capitalist, this program will not activate the capitalist immune system and hence smoothly pass through the notorious firewall and expand into the core of capitalist organisation, where it will have its anti-capitalist side effect again precisely because it is not coded in the language of anti-/capitalism.

5   Execute: outlook to the organisation of a deconomised society

Every viable computer virus consists of a small number of essential components [Ludwig, (1991), p.16f]. First, a virus must contain a search routine that defines which parts of the target environment are prime targets for infection. We therefore suggested focusing on capitalist organisation programs in general and the corresponding programming language in particular as access cues for effective contact infections. Second, there must be a copy routine to copy the virus into the identified target areas. As organisations are social systems, the code copied by our routine was written in the language of social differentiation. In looking into the programming language of capitalist organisations, we found that the economy bias of these programs implies that they are coded in the language of functional differentiation. We therefore coded an organisational subroutine that allows for the functional reprogramming of organisations. We copied this subroutine to the files in which the function of an organisation is normally defined by the code of only one single function systems. Once copied, our subroutine overwrites the information that modern organisations are necessarily monofunctional with the information that all organisations are multifunctional decision systems. Our routine hence turns organisational function system biases from implicit constants into explicit variables. This switch enables economically biased organisations to code more decisions in the languages of non-economic function systems. Our virus is therefore not an anti-capitalist program indeed, but rather a program for more functional diversity, which is why it will not be detected by the capitalist immune system and pass through the firewall of capitalist organisations. Once in the program, however, it will have an anti-capitalist side effect because the more decisions are coded in the languages of non-economic function systems, the less important the economic code and the less economically biased the concerned organisations. Organisations for and of a post-growth economy will hence be less concerned with questions economic de-/growth and more with a growing interest for de-/growth in other functions systems of society. The fact that our virus has an anti-capitalist impact without being coded in the language of anti-/capitalism therefore

serves as a veritable anti-detection routine, which is the *third* key component of every viable computer virus.

Another key advantage of our virus is that, unlike morally coded side channel- or brute-force-attacks, it does not cancel the key principle of organisation, which is in the communication of decisions in the medium of alternatives, with alternatives being what the idea of a post-growth society, at its heart, is about. Consequently, our virus is not a killer, but a parasite, and therefore interested not in the destruction, but rather in the reprogramming of its capitalist host, which, once infected, will soon not be capitalist anymore.

Since this program attacks both the positive and the negative side of the capitalist source code, however, our virus has both an anti-capitalist and an anti-anti-capitalist effect. The transmission rate of our virus will therefore depend much on whether or not anti-capitalists are willing to pay this price. If as anti-capitalists we feel comfortable with our role as observers of the negative sides of the capitalist code, then we will be making every effort to play our part in the defence of the capitalist system. If, however, we are truly interested in the observation of alternatives to capitalism, which regrettably implies the observation of alternatives to anti-capitalism, then the time is now to press ENTER.

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Notes

1 "Thus the code is a double-sided form, a distinction whose inside presupposes that there is an outside. But this inside/outside relationship of the code's form should not be confused with the difference of system and environment" [Luhmann, (2000), p.16] or, more generally, form and medium, respectively.

2 Defined as a form of downscaling (Latouche, 2006; Fotopoulos, 2007; Schneider et al., 2010), sustainable degrowth is consistently said to be achieved when "small to medium scale innovations such as shared mobility, shared housing systems or community currencies (…) can be scaled up and provide the building blocks of a future degrowth society" [Schneider et al., (2010), pp.515, emphasis added]. Advocates of degrowth do obviously not negative all forms of growth (Scheiber et al., 2011), which might be particularly true for growth in the numbers of supporters of the degrowth movement.

3 In this sense, the equaliser indeed has a "capacity to capture a set of existential conditions of life in contemporary capitalism and offer these to the players in a form that allows them to explore, challenge, and play with these conditions" similar to the one that is attributed to games such as poker [Bjerg, (2011), p.450]. At the same time, the equaliser is more than a 'play-form of capitalism', and this sense a radical form of gamification (Roth, 2015).