Thinking About Open Access—Concretely

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Abstract: In a recent review essay concerning open access (VALSINER, 2006), readers are confronted with some claims about the shifting of publication costs from the producer to the user without actually facilitating access to the products of scientific research. In the absence of concrete cases and case studies to substantiate the claims, I felt that the comments in their abstractness, while I sympathize with them, do not sufficiently advance our understanding of the issues involved in the open-access phenomenon. I am calling for a more differentiated, concrete method of dealing with open access and especially with the question of who is bearing the costs involved in publishing research results.

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1. About Thinking Abstractly

> Think? Abstractly?—*Sauve qui peut*!
> (HEGEL, 1808, in KAUFMANN, 1966, p.113)

It was with great interest that I approached Jaan VALSINER's (2006) review essay concerning a collection of essays on open access. I had done and published a sociological analysis of the fate of on-line journals that distributed the costs of distributing research results such that these were born neither by the producers nor by those consumers who have (access to) the structure that accesses an Internet-based distribution system (ROTH, 2005). I was particularly interested because I recognized the author's name as associated with a theoretical approach that I sympathize with and employ. As I read through the review essay, however, I began to be frustrated with the "abstract" way in which a

highly differentiated and complex issue was portrayed. It was while reading that HEGEL's article came to my mind—I had no control over this emergence but felt, upon re-reading the essay repeatedly, that there is some justification for it to be mentioned in the present context. Thus, whereas I am very sympathetic with VALSINER's argument at a generic level, I would have wanted the author to develop his argument in a dialectic way, which means begin with a concrete universal move through the mutually opposing concrete particulars, and end perhaps with a solution that sublates any contradictions identified. [1]

As it is, reading the text left me frustrated by the lack of a deep analysis of the costs involved in publishing, distributing, and accessing research results. To say, as VALSINER does, that the prices of journals are high is insufficiently discriminative to get to the heart of the issue. If, for example, the price of a journal is high that publishes research itself requiring multi-billion dollar accelerators (as in high energy physics), then it is likely that those who work in the area also have the funds to publish or purchase the journal independently of the country they come from. Thus, a physicist from an African or Latin American country who is the lead author of an article deriving from research conducted at CERN likely has the access to the funds necessary to get his or her results into an "open access" journal that charges the authors. On the other hand, my ethnographic research in the disciplines of field ecology and education shows that researchers often (have to) operate with minute budgets and nevertheless have the potential to contribute enormously to the current state of the art. In this case, making an author pay for publication in fact eliminates those who do not have access to funding or who have access to limited funding only independent of the economy of the country they are from. To better understand, more detailed analyses of concrete instances are required. [2]

Costs associated with publishing do not only limit people in third-world nations or scholars in less-heavily funded areas, but also those who are more productive and write more than others. Thus, I personally would not be able to publish as much as I do if I had to pay for each and every article; this is the case although I am amply funded (relative to the Canadian context) through my national agencies. It is just that there is an imbalance between the amount of writing and the amount of funding I actually receive. [3]

At times, the text of the review article felt to me like a diatribe, which I am familiar with in MARXist and neo-MARXist scholarship and which I have not liked despite my own Marxist predilections. Thus, we read that

> "The current 'open access' debates need to be seen in light of this transition of collective monopoly—what is 'opened' for scientists all over the world in terms of overcoming the financial barriers of access to subscription journals is taken over by the monopolizing of technical access control to the 'open materials' by the providers of technological access" (VALSINER, 2006, ¶20). [4]

The author continues by suggesting that the providers to the Internet are the new beneficiaries, as they gain with the subscriber fees and access limitations. The

upshot is that the boundaries of access have been shifted from the traditional publishing houses to Internet providers. Surely VALSINER wants to be more discriminative than that: being more discriminative implies getting into the nitty-gritty details of concrete case studies, the contradictions and resistance they exhibit, turning up the varied and variegated nature of the beast under analysis. [5]

VALSINER has had other possibilities and options for writing his critical review. *FQS* is an online journal that does not charge fees to producers or users of articles. More so, it does not have a page limit. The author therefore could have produced twice as much text devoted to a careful argument, supported by sufficient concrete detail that would have done more justice to the complex issue of open access. In my reading, VALSINER has not really delivered sufficient evidence in support of his claim stated in the first sentence of the abstract: open access is simply a transform of closed access characteristic of print journals. I do agree with VALSINER, however, about the fact that some people in the world have to pay more heavily than others, at least relative to the resources they have available. A more distributive social justice is required to make those who actually have the means carry more of the costs for publishing—which in some instances now partially is done in countries where labor is cheaper, such as when large European publishers (e.g., Springer) get the layout of books and journals completed in India. But even this does not really get at the heart of the issue. Pushing our analysis a little bit reveals that the computer revolution in the West is possible in part because computer and software makers exploit people in poor countries who, for a dollar and a dime, solder together the computers, which are then sold at "affordable" prices in some industrialized country. [6]

In this paper, I propose a differentiated, concrete approach for analyzing and theorizing the costs involved in the production, exchange, distribution, and consumption of research results. My approach is grounded in cultural-historical activity theory, a dialectical approach to understanding societal processes.[1] I sketch how an analysis of publishing as activity system might proceed and conclude that what we need are ways to equitably distribute the necessary and inherent costs of this particular form of human activity. [7]

2. Understanding Societal Processes

2.1 A general framework

Publishing is a cultural-historical activity system, which, as any such system, *produces* outcomes. These products enter circulation, where they are *exchanged* for other goods, are stored to give rise to unequal *distribution*, and are *consumed*. Production is for the purpose of sustaining the life of the collective; in participation and contributing to the sustenance of collective life I sustain and gain control over

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1   In the Anglo-Saxon literature, MARX's terms relating to society, such as the adjective "gesell-schaftlich" (societal), is translated into English as "social." This is also the case for translations of Russian (Soviet) psychologists. Social, however, is not societal, for MARX might have used the adjective "sozial" (social). The choice is a political one, because it evacuates from analysis to role of society in the inequitable distribution and justice. Here I use the adjective societal wherever I refer to phenomena that have their origin in and are mediated by society.

my individual life conditions. As any cultural-historical activity system, *production* has as its converse side: *consumption*. It is not just that the products are consumed—e.g., print or online journal articles are read—but the very process of production also is a process of consumption (MARX, 1976). Production consumes resources, material and energial. This consumption, therefore, comes with a cost. Costs have to be born by someone, materials have to come from somewhere and energy has to be produced, perhaps stored, and transported. Those who do the work have to be remunerated, directly or indirectly. As any other activity system, publishing is part of a highly differentiated human society that allows individuals to contribute to the maintenance of collective life in a variety of ways and, in return, receive the means to sustain their individual life. Publishing therefore also needs to produce the resources to remunerate people and to cover the costs that arise in different, often-invisible places. Thus, for example, Internet providers are not singular entities out there who control something and enrich themselves. They themselves are connected into the complex network of activity systems that support the survival and development of collective society, which in turn mediates the survival of the individual. There are people making the Internet work: there is a real person coming to my home, connecting the cable, pulling a new cable through the rafters in my basement, making a hole into the floor of the room that serves as my office. There are others who fix trouble when the cable has been damaged by one of the storms that move through my geographical area while I am writing this essay. There are those responsible for the neural networks that can find out where the weak points and breakdowns are in the provision of Internet to my home. All of these people can make a living and secure their life conditions by contributing in their way to the productive production and reproduction of society. It is therefore not legitimate to simply say that Internet providers control or limit open access to research results. A provider is not one person, one entity, but a highly differentiated network of people and things, all of which make a living by contributing in one rather than another way to the sustenance of collective life conditions. I am pretty sure VALSINER agrees with all of this; and if so, then he has the responsibility to articulate his critique more fully and to avoid cutting corners. [8]

2.2 A model for thinking societal processes: Third-generation activity theory

VALSINER took and elaborated on a so-called linear sequence of roles in the publication process. But this is an abstraction and, as all abstractions in a dialectical approach, it is one-sided, having adumbrated important social and societal relations that always have subtended the actors involved (ROTH, 2002a). The sequence *appeared* linear because the work of many has been made invisible. There never was just a linear scheme involved in publishing, because there have been multiple journals in many disciplines for many decades. A third-generation activity theory conceptualizes society in terms of the network of concrete activity systems, exchanging objects and people, all in the process of assuring the suitable conditions for collective life. The image of a network—itself connected to other networks that mutually stabilize each other through the

passage of not just one but multiple immutable mobiles—is a more appropriate image and model (ROTH, 2005). The result is society thought in terms of a network of networks, each involved in producing, consuming, exchanging, and distributing to the point that even exchange and distribution are activity systems in their own right (e.g., post, courier, phone). This is also the case for the review process in particular, which, in its complexity and connectivity to other activity system, therefore can be a quite vagarious process (ROTH, 2002b, 2004). Accounting for publishing—both in print as in online media—in terms of mutually interacting, connecting, and stabilizing networks allows us to understand editorial power, access, the failure of online journals, and so forth as effects. Thus, the authors already have had the choice in the age of paper publishing among several journals and several editors, publishers, reviewers, and so forth. [9]

The figure provided as a "non-linear model" of publication and access (VALSINER, 2006, ¶14) is insufficient in its generality, because it abstracts from the relations that subtend the actors in society writ large. The authors of scientific articles are not beings as such, out there, independent of the other elements in the figure—authors also are reviewers, editors, editorial board members, and readers. In fact, the different human actors in the figure—authors, reviewers, editors, readers—stand with their institutions (e.g., universities, colleges, research labs) in mutually constitutive and mutually presupposing relationships. The human actors are what they are because of their relations to others; in other words, human actors are *effects* (outcomes) of activity systems (MARX, 1976). For example, an author is more than an author. In a North American university, where tenure and promotion decisions are based on "scholarly productivity," each author also takes part in networks where his or her portfolio of published research is an artifact that is circulated among tenure and promotion committee members, external evaluators, moved from department- to faculty- to university-level committees, and so on. The individual is not just an author who has something interesting to say or important results to report. It is also an author who is held accountable and who therefore requires a list of publications to make it through the next hurdle or to increase his or her salary—which, at my university, also is a function of publication productivity. That is, already the author function is mediated by an author's other commitments, constraints, participation in other networks, roles, and so on. The same may not be the case in other countries, and certainly is not in many, where professors are not held to publish and receive salary increases despite the failure to publish. [10]

A similar case can be made for reviewers and editors, scholars in their own right, who do not just participate because they are philanthropic contributors to noble, knowledge-constructing scientific endeavors that lead to benefits for society at large. Rather, at least in the North American context, being a reviewer or editor of a "prestigious" "top-tier" journal is but one of the ways in which professors gain symbolic capital that is converted—in tenure, promotion, and salary processes—into social and economic capital. Of course, becoming a reviewer, an editorial board member, or an editor itself is involved with social capital—one needs to know the right people and be connected into the appropriate *invisible colleges* to be selected. In other countries and other parts of the world, where there are

different selection and reward schemes, being a professor, author, reviewer, or editor leads to very different forms of compensation, different forms of capital. These constitute different resources and structures, and therefore are associated with very different socio-cultural and cultural-historical practices. [11]

Open access therefore means different things to different people in different contexts. A professor in a Central or South American university that does not have the same accounting schemes linked to tenure, promotion, and salary advances, will not be affected by the different ways of making users or producers pay for the publications. How the different open access schemes affect people or mediate their activities ought to be the outcome of an empirical analysis, not subject to a quick, general and generalizing (i.e., "abstract") analysis. A much more variegated form of analysis than that VALSINER provided in and with his text is required. [12]

2.3 On power and other determinations

From the cultural-historical activity theoretic perspective outlined above, I would have expected a quite differentiated analysis of the open access phenomenon, in the dialectical tradition that ranges from PLATO over Immanuel KANT and Georg W.F. HEGEL to Karl MARX and the cultural-historical activity theory that has been developed by Russian psychologists including Lev VYGOTSKY and Alexei LEONT'EV. There is also a tradition of dialectical thinking among late twentieth century philosophers, including Jacques DERRIDA, Paul RICŒUR, Jean-Luc NANCY, and Didier FRANCK, who articulated an approach that has overcome the problems introduced both by G.W.F. HEGEL and the phenomenological philosophers Edmund HUSSERL and Martin HEIDEGGER. [13]

I was surprised, for example, to see VALSINER make a number of statements that I would not have expected someone to make who has a socio-cultural and cultural-historical approach to human activity, knowing, and practice. The socio-cultural and cultural-historical frameworks, rooted in MARXist thought as they are, immediately lead us to be discriminative, unearth (by enacting an archeology of) the *inner contradictions* that express themselves in apparent contradictions (consciousness) and resistance (material) that mediate all forms of human activity. Thus, the author summarily states: "new technologies lead to the re-organization of power relations between various social institutions that participate in the transfer of knowledge from authors to readers" (VALSINER, 2006, ¶19). Both concepts, that of *power* and that of *knowledge transfer* are much too complex to be analyzed in such a summarily form, and, in the way used here, therefore are untenable and contradictory. [14]

Power is one of those concepts that social theorists often use to show how individual human beings are subject to determinations outside of their own range of action possibilities. But such an approach insufficiently articulates the degree to which each individual contributes to the production of social and societal relations. Each "I" is not just subject to the vagaries of computer design, made to embody the ideology that comes with computer, computing, and computer

languages; I have choices and my actions both mediate and change the ways in which I interact with my environment. If some people one-sidedly had power, then they would *determine* social and societal events, and we would be in a theoretical and methodological determinism typical of (quantitative) sociologists. A dialectical approach, on the other hand—whether this is grounded in a cultural-historical activity theory (LEONT'EV, 1978), structure|agency (SEWELL, 1992), structuration (GIDDENS, 1984), or habitus|field (BOURDIEU, 1990)—would have led to a more differentiating description. Power relations do not exist out there like my coffee cup made of clay. Power relations, as the word "relations" indicates, are an effect of the interaction—or rather *trans*actions—of people within particular institutions, and the image of power is a resource for acting but not a determinate and determining force. If we do not analyze in each particular case how power also is the effect of human agency, then we end up reifying the existence of power as a force out there that *determines* our every action and we are reduced to mere cultural dopes. This is certainly not how I experience my life, though I am far from a powerful person, and this is not what I would expect this author to claim. [15]

Similarly, I was surprised to read about transfer as a process that moves knowledge from author to reader (VALSINER, 2006, ¶19). Such a claim is simply untenable both on theoretical—whether I take a postmodern (DERRIDA, 1981), radical constructivist (GLASERSFELD, 1989), MARXist (IL'ENKOV, 1977), phenomenological (RICŒUR, 1991), or any other of a number of epistemological approaches—and on empirical grounds—any book on mathematics in everyday circumstances provides sufficient evidence about the gap between the mathe-matics people learn at school and the mathematics they enact in the supermarket (LAVE, 1988), selling candy in Brazilian street markets (SAXE, 1991), or completing orders in dairy factories (SCRIBNER, 1984). For most social scientists, knowledge transfer therefore is a non-viable concept. [16]

Both concepts require the notion of difference: in power, in knowledge. In the former, more power is said to lead to particular forms of interaction, in which the more powerful makes the less powerful do something against his or her will. I am sure that there are situations in which this scheme is enacted in such a way that power differences have been reproduced. But this scheme does not work for all cases, which requires us to rethink its generality. Thus, in one study we analyzed the interactions between students (undergraduate, graduate) and professors and research scientists in their disciplines (ROTH & MIDDLETON, 2006). The students had invited scientists and professors to participate in interview/think-aloud protocols concerning graphs and graphing; the tasks had been culled from first- or second-year university courses in the discipline of the scientists and professors. Thus, the latter had been invited as experts; they also held institutional positions based on their knowledge of the respective discipline. On the other hand, the students worked for a research project. They were inter-viewing others *about* their knowledge of graphs that the students had brought to the session. As participants of a research team they might be held knowledgeable about the tasks that they administered. The issue of "power" and "knowledge" is complex in this situation. [17]

The analysis of the data shows that "who knows what" is subject to continuous "negotiations"; during these negotiations, uncertainty is both a resource and product of the interactions. Thus, the interactions could not be predicted based on the assumption that the scientists and professors had more power or knowledge; nor could the interactions be predicted based on the assumption that the interviewing ([under-] graduate) students knew more or were in a more powerful position because they were part of the research team concerning graphs and graphing. More so, even the role that individuals played in which session is an outcome of the interactions rather than a predetermining and determinant factor. Thus, we show that who knows what, who is in charge of the session at each moment, what the individual roles are, who asks questions and who responds all were issues that could not be predicted on the basis of one or the other set of institutional roles that session participants came with (student–professor, interviewer–interviewee). [18]

As shown in recent dialectical phenomenological work (e.g., DERRIDA, 2005; NANCY, 2000), difference is the effect of being singular plural. We cannot argue that someone is in power or usurps power and someone else has less of it. We are singular, therefore always different, inherently, and this also in any dimension of being that we can achieve through hermeneutic and logical abstraction from lived praxis. But these differences do not *determine* relations, those of power or knowledge. They are resources for and outcomes of activity; but how these are put into play is itself an outcome of situated activity, which is indeterminate from a dialectical perspective because of the qualitative nature of relevant difference. [19]

3. Publishing as Activity System

To move beyond simple generalizing schemes in the discussion of, for, against, or about open access as phenomenon and topic, I propose to analyze the publication enterprise as an activity system, connected with many other activity systems, each providing opportunities for people to contribute to collective life conditions (society) and secure their own life conditions. A dialectical approach begins with the structure|agency relation. A structure|agency perspective allows us to immediately recognize the requirements for *any* form of agency: structure, which comes in the form of resources/constraints and schemas (SEWELL, 1992). Any new form of structure requires productive agency, which, as MARX pointed out, inherently is consumptive agency. Structure does not just mean resource for action but also constraint for action. As resource, the agency-supporting aspects of structure are highlighted in the concept of *affordance* (GIBSON, 1986). But affordances do not just allow us to do things; they also lead to stasis when human agents see some entity *only* in terms of affordances, because then new ways of perceiving it are no longer possible. It allows us to analyze distribution, for example, the unequal distribution of resources as well as access to unequally distributed resources. It also allows us to understand exchange and consumption. Each of these processes, distribution, exchange, and consumption are activity systems in their own right and therefore can be analyzed in terms of production, consumption, exchange, and distribution (MARX, 1973). This iterative, fractal nature is the result of the cultural historical origin of society and the processes of

division of labor concerning the production of basic needs. The system has this fractal nature, because in the very moment humans began to modify their environment to *produce* food and tools for consumption purposes, they simultaneously brought about the possibility of exchange and distribution. [20]

3.1 Distribution

In the not-so-distant past, with the traditional paper-based journals, authors also already contributed to financing the distribution of their work, even when publishing in those journals where they could publish without paying page fees (even paper journals, such as *Journal of Educational and Psychological Measurement* have had page charges, or in fact, double charges, as they also made readers bear some of the costs). Thus, authors were offered reprints, which they subsequently sent in response to requests. These reprints, depending on the length of an article and on publisher, already involved tremendous costs, especially in the social sciences where articles by far exceeded the rather limited lengths of articles in the natural sciences. I recently published an article, for which 50 printed copies would have cost over € 1,300 and for which I was offered 50 PDF copies at a fee of € 200. The requesting readers, however, pay at best the costs of mailing a letter or card to me or may do the requests via e-mail, in which case they or their institutions pay for Internet access. Exchange of information is a form of praxis, to be analyzed in the same way production is analyzed (MARX, 1973); such analyses reveal the same forms of economy as those associated with production or distribution. Even consumption is associated with costs— eating a torte or reading a book require energy, which has to come from somewhere through exchange processes. Even if I had my own Internet company I still would need electricity, still produce the articles, sharable electronic files (HTML, PDF, DOC formats), and so on. Social scientists cannot stop short doing an analysis of shifts in power from publisher to Internet provider. Society is a resource for and a complex effect of productive praxis so that a careful analysis has to trace out many connections to show why and how power and knowledge are resources and effects in and for interaction. [21]

It is not simply some individual or entity that gains in the publication process at the expense of others. Authors gain in publishing; readers gain in reading; individuals involved anywhere in the process make a living; and publishers make money on the surplus value generated in the entire process. The latter do reap benefits, or they would not engage in publishing. But because they act, publishers and their production facilities and processes expend material resources and energy, which have to come from somewhere, exchanged for some thing. And all exchange has come to be measured in the form of (monetary) costs. Even time is measured in monetary terms ("Time is money"). [22]

The costs are and have been spread around wherever and however the capitalist pricing schemes extort and have extorted their profits from the network of activity systems. Thus, readers do not have to purchase subscriptions but can obtain articles one at a time; or interested readers may write to the author to get a "free" copy, a reprint, that the author, having published at "no cost" nevertheless has

purchased from the publisher. Users do not have to print their electronic copies and thereby bear the printing costs—as VALSINER claims—but use their PDF versions, annotate them, highlight text, conducted word searches, etc. But this, too, comes with costs: access to or purchase of a computer, electricity to run it, the appropriate software, and so on. Even when they have not purchased reprints, authors have made available photocopies of their articles or have sent their manuscripts electronically. Thus, even in the print area, any author interested in scientific research has had ways to access interesting articles in ways that were associated with no or only marginal costs to themselves. [23]

Costs were distributed around even prior to the discussion of costs. Authors and readers, through forming associations, found ways of making available research products at a lower cost than were charged to individuals and libraries not in the association. (I remember that I paid my first year of subscription of *Science Education* at full price, because I had not known that I could get a substantially reduced subscription through a membership in the *Association for the Education of Teachers of Science*.) Even in the age of the printing media dominance, there were variegated (differentiated) prizing schemes. For example, the *Journal for Research in Science Teaching* had a per page fee for non-members of the National Association for Research in Science Teaching, but did not charge fees for publishing an article that a member had submitted. More so, the membership fee in the organization, which always has been a fraction of the library cost of the journal, also comes with a subscription of the journal. The *American Educational Research Associations* offers two of its journals for free with the subscription but charges a fee for any additional journal that it produces. [24]

"Costs" appear in the most unexpected guises and disguises. For example, access to an online journal VALSINER created ([International Journal of Idiographic Science](#)) is not so open after all—one has to "pay" with one's e-mail address and other personal information, used to "gauge the level and type of interest in th[e] journal." To see what the journal is all about I had to give up an aspect of my privacy to register. VALSINER gained, because he now has a better understanding of the kind of people accessing his journal at least once; I gained in that I know what the journal is about and in that I have another concrete example of an electronic, "open access" journal that has a more limited publishing schedule. That is, one has to give up privacy, pay with one's privacy to have *open|not-so-open* access to the open|not-so-open *International Journal of Idiographic Science*. This may appear innocuous, but someone gains, here the editors gain information, and information, comes with a cost, which, as always, is born by someone or something somewhere even if it is not immediately evident. This example also shows that costs do not have to be monetary but can also be in the form of information, labor, etc. [25]

3.2 Consumption

Consumption both completes the production process—readers read published articles—and its dialectical negation—producing anything consumes energy and material resources. Here I am concerned with the analysis of consumption that

completes and begins the productive process. As a consumer of scientific research, I do not read every journal or every author that exists, but I select, simply because of the glut of texts that I would not be able to "digest" (consume, understand). Consumption is itself a form of activity to which the apparatus of activity theory can be applied. Doing so would have led us to a better articulation of the phenomenon of consumption in open-access systems, the costs involved, and who is bearing them. Thus, I would have liked to see VALSINER discuss and provide supportive (concrete) evidence for the tension between *having access* and *using access*. In the past and with the existing peer review schemes, there has been and is a selection process that—rightly or wrongly—separates some articles from a large number of pieces submitted to a journal. Because there are page limits in printed journals, a selection process rank ordered the submission, and, depending on journal, selected the top 5, 10, or 20 percent for publication. This does not mean that the next 5 percent of articles were inherently bad, poorly conducted research. Rather, because there is only limited space, these articles could not be published because of space constraints. The converse of acceptance rates, rejection rates, themselves have become indicators for quality in the institutional processes of evaluating the quality of a researcher—particularly in North American universities and their historically developed system of accounting for a professors contribution to the discipline and institution in terms of the quantity and quality of their publications. This is similar to anything else in society, such as going to the supermarket. Each supermarket only has a limited offer, only so much space to put for sale their products. I do have access to all stores and all products in the region, but I do not make use of this access for a variety of reasons. I use certain structures in the environment as filters for preselecting. [26]

When I go to the supermarket, I make a selection among the many products it offers. The quality of these products is not immediately inscribed and visible, nor is their taste. The selection actually made is the outcome of a dialectic process in which incommensurable aspects have to be taken into account (cost per weight unit, taste, shelf life, packaging size) so that the result, the specific choice, is an *indeterminate* outcome of the process (LAVE, 1988). In the selection, we use certain filters to assist us in selecting, filters that are produced and installed outside our immediate sphere of determinations. For example, I go to a particular supermarket because it generally has a good product selection, the fruits are organic and well handled, and well prized though not necessarily the cheapest available in town (driving, riding the bicycle, time and so on also are costs that consumers often do not figure into the actual price they are paying). I can find fare-trade products that directly support producers rather than the middle "men" enriching themselves in the exchange process between producers and consumers. And because I do not want to go from supermarket to supermarket, I purchase other products there, too. That is, selecting the store, which makes a selection among product, serves as a filter, as much as selecting a particular journal, which has made a selection among the many articles submitted. I read some journals and some authors over others because of reasons that mediate rather than determine my choice. [27]

Having journal editors, publishers, reviewers, etc. involved in the process of publishing constitutes a form of filter. But these filters are not necessarily negative. Rather, they can be seen to be a form of actively changing your environment such that I, the individual, do not have to do all the work (bear the costs) of sorting through piles of text. It is intelligent behavior to stack your environment so that mostly salient information has to be processed rather than an unlimited amount. This, too, is fundamentally human and consistent with an enlightened MARXism. [28]

3.3 Competing realizations of an activity or why open access doesn't currently make it in some disciplines

A cultural-historical approach to the analysis of social systems includes also focuses on the negative cases that do not appear to support the claims made, and which, in fact, ought to lead to an improvement of the theoretical notions social scientists employ (IL'ENKOV, 1982). Any form of activity contributes to the maintenance of society, and because of the individual|collective dialectic, to the maintenance of individuals who participate in cultural-historical forms of societal activity. Participation leads to benefits—often salaries, sometimes goods (my being a gardener actually supplies me with all my year-round vegetable needs)—that allow us to meet our basic needs and therefore our survival. My own room to maneuver increases when I participate in one or the other activity, and decreases when I do not. As a street bum, I depend on the pittance that by-passers drop into my open hand or hat. No pittance, no food (or drink)! Living in society and participating in any one of many forms of activity therefore comes with choice (HOLZKAMP, 1983). Each form of activity generally is realized by numerous concrete cases; the very concept of activity constitutes a possibility that is and can be realized in numerous forms. [29]

In the notion of activity is implied a possibility of contributing to society. But a possibility, which exists collectively, means that I can concretely realize it in various ways. In the very existence of a *notion*, of *thought*, variation is implied (DELEUZE, 1968/1994). Based on this understanding, I was surprised to read that *the* Internet provider gains control. There is no "*the* Internet provider" but, in Western countries, a multitude of providers, including the universities and different commercial outfits among which the scholar may select. Though in some areas or streets, there may be one provider only because of particular geographical constraints. Scholars may even select to have a combination of modes of access—I work mostly from home, where I have commercial access, but then link into the university. I do have different e-mail accounts and web space, but only make use of the one provided through my university account. That is, here, as in any other activity system, there are resources available for action and intelligible reasons for making selections; only a concrete analysis of each particular case allows me to understand why and how people act or not act in the way they do, including choosing one kind of journal (e.g., print) over another kind (online, open access). [30]

For publication outlets, too, authors have choices. And having choices mediates the very possibility or realization of open access journals, including those that charge neither user nor producer fees. Thus in some disciplines, such as *science education*, electronic journals, though (and perhaps because) they do not charge fees—i.e., costs are absorbed by the editor, reviewers, institutional server, etc.— have not had any impact on the field (ROTH, 2005). The leading scholars in the field do not submit to these journals, articles published therein do not count much when it comes to tenure and promotion considerations, and the leading scholars do not participate on the editorial board and review team. *The Electronic Journal of Science Education* has not published any articles after 2003 and its editor "deeply regrets" the "major backlog in its publication schedule" (http://unr.edu/homepage/jcannon/ejse/ejse.html). Another electronic journal, the *Electronic Journal of Literacy Through Science* published only one (1) article in all of 2005, though some of the print journals in the same discipline have expanded in recent years and publish a tremendous number of articles—e.g., *Journal of Research in Science Teaching* (10 issues per year) and *Science Education* (6 issues per year). Some journals reject between 75 and 80 percent of all articles submitted. There are many possibilities as there are many journals offering space for articles, such as the *International Journal of Science Education* publishes 15 issues per year. And there are many other journals also providing authors with outlets, including *Research in Science Education*; *International Journal of Science and Mathematics Education*; *Canadian Journal of Science, Mathematics, and Technology Education*; *Science and Education*; *Science and Technology Education*; and *Research in Science and Technological Education*. There are many more journals that are potential outlets for scholarship, and new ones are emerging, such as *Cultural Studies of Science Education*, a newly founded journal published by Springer alongside its other journals in the same field. Why do online journals have such a hard time even getting submissions, though they provide free access both to authors and readers? [31]

3.4 Bearing the costs: toward distributive social justice

Any way of organizing the publication of research is associated with costs in terms of resources and consumptive agency, just because it is inherently associated with structure. Somewhere in the network of activity systems (i.e., society), these costs have to be born. Financial costs are but a means of redistributing material and agency-related costs across society as a whole. There is a saying, or perhaps an overly used and somewhat worn phrase attributed to the two-time economy Nobel Prize winner Milton FRIEDMAN: "There is no such thing as a free lunch!" Even saying or writing this sentence is not free but comes with costs, however small they are. Simple analysis of production—which is the single characteristic distinguishing human form from other forms of existence— leads not only to labor costs, which have to be born, value, and consumption but also to exchange and distribution. In the extreme, equi-distribution means originary primal soup. As soon as we have boundaries, we get distribution, inherently uneven because it is along gradients that we get processes going and therefore exchange. [32]

Anytime something is produced, consumed, exchanged, and distributed, costs are involved. Conversely, if there are no costs, nothing happens. "Open access," if it is a slogan to suggest that there is something like a free lunch simply is deceiving. The real question therefore is not whether or not something is associated with costs. Someone or something has to bear the cost. The real questions include: What are the real costs in publishing and using results of research? Are there some (publishers, industry) reaping profits by exploiting others? How are the actually incurring costs to be distributed over and across society as a whole? and Who or what should bear the costs such that there is some equity involved? With respect to the latter question, I am thinking of the notions that have purchasing power in other areas of human activity, *distributive social justice*. In the present context, I understand this concept to mean that we enact equitable access to the resources and equitable bearing of the costs at all levels of the production and consumption of research results. Thus, producers and consumers in areas of the world that traditionally have born the brunt of capitalist exploitation and now suffer from it in impoverished economies would have to bear a lower fraction of the total costs involved than those who live in countries with proportionally more economic resources, which have been extorted from the former countries. Decisions have to be made on a case-by-case analysis rather than by generically assuming costs to be born in one or another way. Such an approach is reasonable given the fact that those who enrich themselves in the processes of publication of new knowledge by siphoning off the surplus value generated by all the others that make the activity system work. [33]

4. Coda

In and with this essay, I call for a more differentiated approach to the analysis of open access. The theoretical framework used, cultural-historical activity theory, highlights the fact that all production of research knowledge as well as the processes by means of which the products are exchanged, distributed, and consumed are associated with costs. This framework allows us, and in fact forces us, to account for the cultural-historical changes that lead from print-based primarily user-paid systems to electronic-based primarily producer-paid publication of research. At this moment in history, we are in the transition from one to the other system, or in fact, in an early stage of the coexistence of the two. In any event, the incurred costs have to be born by someone. If open access only means that those who have the required structures (Internet, software) can access research articles, the scholarly community is no further in the proper understanding of the issues. The costs, as VALSINER points out, simply have been shifted to some other place in society. In some situations, having the producers pay in fact excludes researchers because they do not have or insufficiently have access to the economic capital necessary to get their work into the open-access network. On ethico-moral grounds I am therefore calling for the institution of structures that distribute the costs in equitable ways. Those with greater access to economic resources contribute more to the overall costs than those with lesser access. Some societies already have such systems, for example, in the way they organize how social- (structural unemployment, welfare) and health-related costs are born through a *differentiated* tax system. There is a

job for social scientists to track down the more evident and the hidden costs that are involved in the publication of research results. [34]

On a practical level, open (i.e., low cost) access has always existed in the sense that there have been networks of distributing research results at the expense of those who have greater access to economic capital. Operating in the grey areas of existing copyright laws, authors have distributed their work through HTML and PDF versions of the original manuscript or "personal copies" of (paper, PDF) proof copies. Authors do send photocopies of their work when they have not been able to purchase reprints. From my perspective, the very structures of the existing system allow these other, lower cost processes to occur. In fact, the associated costs are simply hidden and born elsewhere in the system. Good social analysis unearths these costs, engages in an "archeology" of the system, and therefore is cultural-historical social analysis, which follows the concrete ways in which the system exists and transform in and over time. [35]

The "open access" phenomenon is an interesting social process. VALSINER usefully contributed to our understanding by highlighting some of the potential trouble spots. However, his analysis does not go into sufficient detail to allow us understanding the phenomenon more thoroughly. I am therefore calling for detailed cultural-historical studies that take into account all the particulars that mediate the activity of producing, exchanging, distributing, and consuming research results. I am envisioning work that is at some level similar to MARX's (1976) analysis of the emergence of the capitalist market, with lots of details that support each of the claims made. That is, I am calling for an approach in which we concretely study and think about the open access; such an approach would mediate any attempt to think abstractly and in undifferentiated ways about a phenomenon that is as complex as society itself. It would also take us beyond simple hype of open access as an inherently better system. [36]

Open access, as intimated earlier (i.e., ¶6), needs to be discussed beyond the question of who pays for the publication and exchange of knowledge produced in scientific research. Even more fundamental is the fact that the "computer revolution" has been made possible by shifting part of the production process (e.g., the assembly) of computers to countries with low labor costs. This means, however, that some person in the Philippines or China works for a few dollars a day six days a week, with only a few days of vacation. Here, vulnerable populations clearly carry the costs for the "revolution." Just as VALSINER points out, there is an imbalance that is not accounted for in the discussions of scientific production, consumption, exchange, and distribution. This is but a further point in support of a more equitable repartition of the costs. It does little good if intellectuals complain about and attack the system as long as we contribute to its very possibility by making purchases that exploit the poor, whether in one's own country or in some other. Perhaps the open access movement can learn some lessons from the fair-trade movement: the money I spend for coffee more or less directly goes into the pockets of the Nicaraguan coffee farmer, whose children were going hungry as long as he was selling to the large multi-national

companies rather than to the small fare-trade roasting company a few streets from where I live. [37]

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