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Privateers in the Sea of Signs

Biopiracy and translation policies

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In the age of biotechnology and molecular genetics, semiology and biopolitics have entered into a close relationship with each other. Linguistics, as it has evolved since the beginning of the twentieth century, has to a large extent been able to revolutionize the understanding and conception of the (western) sciences; it has triggered a plethora of changes in question formulation and methodology, not just in the social sciences, for which the concept of the *linguistic turn* was coined in philosophy, but also in areas apparently as far removed from the problems of language and translation as biology, chemistry, biochemistry and biotechnology. I do not propose, in the following discussion, to provide an extensive analysis of how the complexities of semiological sign theories have shifted scientific paradigms; I am more concerned with seeing in what way signs, their production, distribution, transmission and translation are enlisted in the prevailing social conditions of capitalist globalization, and in what form contemporary sign policies are arranged for the purposes of a renewed colonialization: this time for the biocolonialization of life forms and to conquer, possess and privatize the interiors of plant, animal and human bodies.

One of the challenges confronting such considerations is the claim espoused by the *Borders, Nations, Translations* conference: can a transnational culture of translation be articulated in non-cultural concepts and how can the latter be translated into common transcultural political actions? Given this claim, I would first like to try to enter into a dialogue with this talk of "cultural", "non-cultural" and "transcultural", a dialogue based on the concepts of history, linguistic expression and social setting, in order to discuss a very concrete – albeit simple – translation problem. Before the conference, I was asked, as were all the participants, to propose a title and an abstract in English for the present paper, and was delighted with the opportunity afforded me by this language to define as succinctly as possible the conflictual field of my thoughts or, if you will, the site of the clashes: *Privateers in the Sea of Signs*. The English concept of "privateer" doesn't just mean "pirate", "ship's captor", "pirate ship" or "freebooter", which I chose in the end for the German translation; it also refers to a quite specific function that will play a decisive role in the following reflections, i.e. the function of expropriation or, to use a freely translated German equivalent, *privatization*, which touches on the actual theme of the patenting of life forms and intellectual property, and the privatization of what has been historically regarded as common property.

Privatizations

Up to now we have been dealing with the problems of translating the linguistic expression; conditions become even more complicated when perspectives of history and social setting are also taken into consideration. The best known and most notorious privateers during Britain's centuries' long maritime supremacy were without exception regular admirals in the service of the British crown who, having hidden the national emblem under a different, fictitious or convenient flag, were armed with letters of marque allowing them to carry out their raids to increase the wealth and fame of the British Commonwealth. These historical circumstances lend themselves well to a description of how the largest contemporary privateers operate: transnational enterprises that, under the protection of national legislation, plunder the resources of other nations and societies, and

skim off the symbolic added value of their privatizations as well as the economic profit. Where the British privateers of history were located geographically too is rich in associations for a consideration of biocolonialization. One of the important theatres of war on the high seas was the Gulf of Mexico, and the Caribbean in particular. The British Empire had not succeeded in conquering any noteworthy colonies in the southern regions of the Americas and the colonists in the north showed no great enthusiasm for sending back part of the revenue gained from plundering, exploiting and murdering indigenous peoples to the mother country. Over many centuries, by contrast, Catholic Spain obtained a regular supply of precious metals, dug out of the American mines by indigenous peoples who were enslaved, forcibly recruited and worked to death. To exploit these natural resources, letters of marque were issued to the British admirals, exemptions from the Empire's maritime law were promised and a network of fairly inaccessible harbours was established along the Caribbean coasts of modern Belize, from where the privateers, protected by the shallows and the coral reefs, boarded the mostly Spanish merchant ships. Belize is still a British possession, the free trade deregulated today by the World Trade Organization knows many exemptions for the privatizing enterprises of the so-called developed industrial nations and the battle for the monopoly on the exploitation of resources is waged just as it always has been on the backs of the "wretched of the earth".

Expropriations

This then is broadly the historico-social overview of the privateers. Translating references such as these is not possible in German-speaking countries; here we are faced with an entirely different situation, in which the best known and most notorious privateers were recruited from a completely different social setting. To shed a little more light on the situation, I want to discuss one of the most famous and most notorious of these privateers. This is a man (perhaps even a woman, as some circumstantial evidence from feminist historical research suggests), whose first name is not even recorded (in contrast to the English earls, lords and dukes who covered themselves in national glory as privateer captains), but to whom the slightest reference invoked terror among the Hanseatic trading companies, the Dutch East India Company and the Danish fleet – Störtebekker. Had we not known from official documents about his capture and execution by the lords of the Hanseatic city of Hamburg, we might have assumed that we were dealing with the possibly empty kernel of extravagant legendizing – so many fantastic stories circulated and still circulate about this legendary privateer that they can hardly all be linked to a single individual, even if that individual were a woman in a man's clothing. The general thrust of this virtually unravellable tangle of sailors' yarn may conceivably be set against the stories about the British *privateers*; it tells of an unpredictably cunning captain, indiscriminately hostile to all trading powers and so dangerous, therefore, that the three trading powers mentioned earlier were forced to put their early capitalist disputes on ice for a brief period so they could join forces to hunt him down. The freebooter was stylized in the legendizing process as a counter-image of the privateer*:* a lawless individual who returns the privatized booty of colonial trade to a kind of common property.

The astonishing forms these common properties were able to assume are relayed to us in the tale of his death. Störtebekker and his crew were finally captured by the Hanseatic powers and all were sentenced to death. Even in the face of death, the freebooter is supposed to have succeeded in playing a macabre trick on the Hanseatic rulers: under a very specific condition, the shameful penalty of death by hanging was transformed into what was considered a more honourable death by means of heads. According to the legend, an already decapitated Störtebekker walked past his crew standing in line, winning freedom for each of the men he passed, headless. That the Hanseatic rulers agreed to such a proposal, as tradition would have us believe, suggests at least that an enterprising Protestantism was quite capable of striking a business deal with death itself. But that's not the end of the story: the freebooter – still minus his head – passed a considerable number of fellow captives, saving their lives, until finally Smutje used his wooden leg to block Störtebekker's path. Smutje did not want to embark on that last great journey without his captain.

At any rate, the impossibility of translation has appeared in the antagonistic relationship of privateers and freebooters and there is also evidence of this impossibility, despite the close relationship of the languages to be translated. Are we also to conclude that Störtebekker's transnational culture of translation – he had fought against the East India Company, the Hanseatic League and the Danish fleet and translated their profits into an upsurge of independence, freedom and self-determination – could be further translated into a common transcultural political action? His undoubtedly political (though headless) action could be transcultural, at least given his shameless dealings with death. But the enterprise becomes a common action only when Smutje steps in, quite literally; his heroism hardly gave those lined up after him much cause to rejoice. Presumably, the story only goes to show how quickly any talk of "culture" and "cultural" pushes us into a rearguard action with death.

Translations

In view of the acute problems of biocolonialization, spinning yarns may suggest a lack of seriousness. But a review of the discourse that the promoters of genetic engineering and patent laws on trade-related intellectual property create around their enterprises can produce a strikingly similar impression: many a yarn is being spun there too. In my attempt to proceed in a reasonably systematic manner, I will first of all examine the close relationship of sign theory, the problems of translation and molecular genetics. It is a rather risky experiment: I am neither a biologist nor a chemist and it remains to be established with complete certainty whether or not the depths of the sea of signs holding the experiment in store have already been totally plumbed or satisfactorily mapped. This sea, to pursue the image, is rough and whips up enormous waves; one should proceed cautiously, therefore, so as not to founder in the first shallows. I would like to make it clear that the following discussion is not about describing what happens in the interior of a cell at the point where life begins; it deals, rather, with what happens in the description of these processes within the discourse of molecular genetics. Since there is no otherworldly viewpoint available for this adventure, I suggest using the outline of a philosophy of signs by Valentin Vološinov as a navigation manual so as not to lose our bearings in the sea of signs.[1]

Let us now put to sea and repeat with Vološinov that every external sign, whatever it might be, is washed on all sides by other signs. "In this sea of signs", he says, "it is born and lives on, for the life of the external sign runs in the constantly self-renewing process of how it is understood, experienced and appropriated", which for him is synonymous with "its endlessly new integration into the inner context." [2] For molecular genetics, this sea of signs is composed of bases and base pairs, which are washed on all sides by acids, or more specifically, nucleic acids. In the microscopy of this apparent chaos, three molecular forms are first identified, which are all composed of the same sign material: very long twisted molecular chains in the shape of a double helix, DNA; shorter, single, untwisted chains, RNA; and complex structures involving both types of chain, proteins. The elements that make up these chains can be counted and are described in genetics as follows: 4 bases, 2 of which can always be combined, and which can all be linked to nucleic acids, numbering around 30, according to current assessments. A manageable quantity of sign elements, which should not however be confused with the chemical elements of which they themselves are composed, producing and updating the world's prose here. What is more interesting here than the structure of these (highly complex) signs is their dynamics since, according to Vološinov, interaction is the actual reality of the signs. "Life", he says, "only begins at the point where one expression intersects with another expression."[3] As molecular genetics conceives it, the molecular chains described above take the place of the expression, especially the longest of these chains, DNA; as a double helix, this is capable of splitting and intersecting with other expressions as a result.

It is crucial to point out that we are not arbitrarily applying the language of linguists in the form of metaphors to biochemical processes. Were it purely and simply about metaphors, we should emphasize that these are

formed from the very concepts that molecular biology itself uses to describe these phenomena. We shouldn't forget that the descriptions of these mechanisms are by no means metaphysical finger exercises; rather, they serve to support very real biotechnological interventions into the cell structure of living organisms, and so should at least be acknowledged as sign models. In molecular genetics, one refers literally to DNA "expressions" and, in the processes described below, "transcription" and "translation" are terms used in molecular biological discourse. So, conceptually speaking, we are also surrounded by the problems relating to questions of translation, translatability, their boundaries and the crossing of those boundaries. In the process of transcription, the information from a strand of double-helical DNA is transferred to the RNA, which is then called "messenger RNA" after successful transfer. In the process of translation that now begins, the two helical strands of DNA come apart in order to be translated into the messenger RNA. It is no coincidence that molecular genetics uses the term "transcription", not "copy" or "reflection": the new version of DNA is not an identical reproduction, but always a transcription of the other expression. Nor is translation an identitarian process: it does not operate linearly – on the contrary, it occurs simultaneously at the most varied points; nor does it operate without difference. The expression to be newly formed is a translation of the expression to which it is related and, as such, it is not faithful to the original. And so it is not totally unjustifiable to have Vološinov comment, somewhat anachronistically, on this process: "There is simply no such thing as an expression without valuation. Each expression is primarily an evaluative orientation."[4] From this perspective on transcription and translation, both processes may also be described as repetition, in that repetition may be understood as a movement of difference, and understanding itself as a reply to a sign with a sign.

Translation problems

Genetic engineering uses both of these molecular processes to introduce other, foreign sequences that, in almost all cases, have been produced from other DNA molecules. This possibility of inputting new sequences into the molecular chains underlines the marvellously appropriate description of transcription and translation as repetition in the sense of a movement of difference. On the other hand, were it a matter of identical reflection processes, it would not be possible to incorporate such genetically engineered differences into the molecular chains. Indeed, we see here the beginnings of some serious problems in the sign theory of molecular genetics. Firstly, the new sequences cannot be integrated directly into the DNA strands; the transfer occurs instead with the aid of what are known as vectors, usually a mosaic of discovered genetic parasites and viruses of varying origins. Vandana Shiva, one of the toughest and most active critics of the technologically patriarchal omnipotence fantasies that have found refuge in biotechnology, observes: "In recent years, there has been a very worrying build-up of evidence that these vectors are the main source of genetic pollution, with drastic consequences for the environment and for health in general. It has been established that horizontal gene transfer and recombination conveyed by vectors are involved in the origin of new, pathogenic bacterial strains that have spread worldwide." [5] Molecular geneticists infatuated with technology might well object that a gradual process to replace these highly explosive vectors with other, less pathogenic ones, could succeed; the sign-theoretical problems of molecular biology, however, are not only technological in nature. Although people constantly talk about genes being integrated into the gene pool in the discourse of genetic engineering, it is theoretically very unclear what exactly these genes are. To reduce the risk of distorting the facts through my own potentially tendentious explanation, a molecular biologist should intervene at this point. Jochen Graw writes in his 2006 textbook on genetics: "Certainly there is still no accurate answer today to the question: 'What is a gene?' While for Mendel it was first a 'unit' that dealt with information for specific characteristics, in the heyday of biochemically-oriented genetics (around the 1960s and 70s), it was crystallized in the useful formula 'one gene – one enzyme'. Because of more accurate knowledge gained from molecular genetics, we know today that the mRNA of many genes is modified in many different ways after transcription, and is not coded for one protein or enzyme alone as a result. Various regulatory elements above and below the encoding regions are heavily responsible for the proper spatiotemporal expression of a gene."[6] For semiology at the beginning of the twentieth century, this contextual dependence of the signifier *(Zeichenausdruck)* was certainly

a well-known problem. Vološinov for instance wrote in 1930: “Contexts do not simply stand alongside each another as if unaware of each other’s presence, but are always in a state of tense interaction.” [7] But such interactions of sign with sign according to the will and imagination of molecular biology should occur as rarely as possible, and they should be restricted as tightly as possible. Thus, for example, Francis Crick, one of the “discoverers” of the double-helix structure of DNA explains the central dogma of his science in 1988 in his *Lessons from Biology*: “Once ‘information’ has got into the proteins, it cannot come out again”.[8] A pragmatically methodological restriction, though, that misses the sign character of these molecular constituents, neutralized as ‘information’. Crick’s dogma of molecular biology finds a counterpart in the biological determinism that represents the gene as a ‘supermolecule’ though at the same time, it is unable to state the locatable areas to which these genes could actually be restricted.

Genetic crafting

Nevertheless, it is still astonishing in this context that genetic engineering is capable at all of achieving intended results, but this circumstance too finds a solution, as pragmatic as it is pathetic in sign-theoretical terms, in the way genetic engineers express themselves. The engineering science of genetic crafting regards around 95% of the entire DNA strand quite simply as “genetic refuse”, which in fact only means that its function is as yet unknown. Information like this is so horrifying that it beggars belief. Instead of an appeal for trust, Ron James, director of the US company Pharmaceutical Proteins Ltd, should have his say: by introducing human genes, he succeeded in changing a sheep’s udder so that it produces the protein alpha-1 antitrypsin for the pharmaceutical industry. Speaking about the relationship of the maker of the genetically modified sheep, Tracy, with the enormous, unknown sea of signs of its genome, James says: “We left some of these accidental DNA fragments in the genes just as God produced them and so achieved a high level of productivity.” [9] I’m tempted to place Vološinov’s succinct comment, “The organism and the world meet each other here in the sign”, [10] alongside this. A brief look at the process whereby Tracy was produced should further emphasize the succinctness of the comment. Of the 550 sheep eggs into which the hybrid DNA was injected, as many as 499 survived, but after the eggs were implanted in the foster mothers, only 112 lambs were born. The human gene was also incorporated into only five of these lambs. Of these, only three produced milk containing alpha-1 antitrypsin, two of them in the low concentration of 3 grams per litre. Tracy was the only one of the 112 biotechnologically generated sheep that, with an output of 30 grams of alpha-1 antitrypsin for every litre of milk, lays the genetically engineered golden eggs, as it were.[11] What are we to think of such a science and what trust has it earned when it publishes studies on the environmental compatibility and biological safety of its machinations? Yet the issue here is not about destroying trust, using sign-theoretical considerations, in an up-and-coming scientific field that is considered paradigmatic for the current state of scientific research and has been presented with the most Nobel prizes for biological research since 1953, the year DNA structure was “discovered”. [12]

The question here is much more about which translation policies are applied in the commercial use of the genetically engineered modification of living organisms in the area of the social so as to point conclusively to some basic strategies against the privatization of common property in the form of life itself. To do this, I will refer mainly to the many kinds of publications, articles and interviews where Vandana Shiva has taken a stand against the arrogance and ignorance of the indiscriminate exploitation, driven by the maximization of profits, of all our global resources, be they animals, plants or human beings. The importance of the clear-sighted, decisive observations of this Indian physicist and environmental activist cannot be emphasized enough; they are welcome buoys in the rough and stormy sign seas of the genetic-engineering ideologues.[13]

Analogies

Let us return now to the sixteenth-century Caribbean privateers. The New World, whose pillaged treasures they again plundered, was divided up between the royal houses of Spain and Portugal, as decreed in a papal bull from Alexander VI. These charters and patents transformed acts of piracy into divine will. The peoples, nations and territories gifted by the pope were not actually his to bestow; indeed they hadn't even been "discovered", for the most part. But that didn't stop him from privatizing the great unknown in God's name. Five hundred years after Columbus, we are now living through a secular rerun of a very similar process of colonization, the outcome of patents and intellectual property rights (IPR). The papal bull was replaced by the General Agreement on Tariffs and Trade (GATT), now the WTO. In place of the free availability of conquerable territories came the free availability of conquerable life forms, which are being manipulated by new biotechnological procedures. The command to convert "savages" to Christianity was replaced by the duty to integrate local and national economies into the global market, including the incorporation of non-western knowledge systems into the reductionism of increasingly commercialized western science and technology.

The creation of property through robbery appears as a variation (or translation) of a principle applied over 500 years. The problem was essentially the same, as John Locke's treatise on private property shows.[14] Locke legitimizes the process of value creation by means of robbery and theft during the period of the European Enlightenment, by unambiguously interpreting the freedom of foundational capitalism as a licence to steal. Accordingly, property is created by taking resources from nature and mixing them with labour; Locke's "labour", however, is "intellectual" rather than physical and manifests itself in the control of capital. Only those in possession of capital are entitled to call natural resources their property; they do so by virtue of a "natural" right, which of course annuls the established rights of others with prior claims. A similar kind of logic is at work nowadays, when biodiversity is purloined from its original owners and discoverers, as its seeds, medicinal herbs and medical knowledge are defined as nature so that it becomes a non-knowledge, and any "improvements" to it are decided on by the tools of genetic engineering. In this particular conquest of historical practices, biodiversity is defined as nature and the cultural and intellectual contributions of non-western knowledge systems are systematically negated.

Creativities

The problems of patent rights on intellectual property revolve around the tricky question of what exactly creativity is. In theory, patents are ownership rights to intellectual creations; at the same time, they circumscribe the free spaces of intellectual creativity by turning a generally accessible knowledge into private property. Innovation in the public sector is a premise for the innovations that are privatized through patents; the patents thus become powerful mechanisms for usurping the results of social creativity. The preamble to the TRIP (Trade-Related Aspects of Intellectual Properties) Agreement states that intellectual property rights are recognized exclusively as private rights, and even then only when knowledge and innovation are designed to generate profit. An innovation must be suitable for industrial application for it to be granted patents. This immediately excludes sectors that are productive or that exercise any inventive activity outside of an industrial organizational structure.

One key point about patents is the fallacy that people are only creative when they make a profit and can guarantee this profit by means of patent protection. This belies the creativity of both traditional societies and modern, scientific communities where the free exchange of ideas is the actual precondition for creativity, rather than its opposite. Patents are therefore the accurate translation of a fundamental anthropological supposition on the part of capital, according to which the ERP (Enterprise Resource Planning) economy is the form of exchange best suited to people, the assumption being that people are exclusively self-interested individuals.

Patenting

But these patent rights are of interest to whom, exactly? Above all, to the chemical industries: the pharmaceutical and agrochemical industry considers that patents are absolutely necessary for the majority of inventions. What does such a patent look like when examined in detail? Let's look at the first instance of when a living organism was patented: in 1971, the company General Electrics and one of its employees, Anand Mohan Chakrabarty, applied for a US patent on a genetically engineered pseudomonas bacterium. Chakrabarty took the plasmids from three different bacteria types and transplanted them into a fourth. He himself described his methods as follows: "I simply mixed genes, changing bacteria that were already there." Nevertheless, he obtained his patent on the grounds that the microbe was not a product of nature, but rather Chakrabarty's discovery and therefore patentable. Andrew Kimbrell commented on the case in *The Human Body Shop*: "the decision of the Supreme Court of Justice on Chakrabarty [was] extended to cover the entire range of what exists as living matter. The patenting of microbes has inevitably led to the patenting of plants and later of animals."[15]

One might object that the idea of possessing life is nothing new. People own their pets and farmers own their livestock. But IPR generates a completely new quality of ownership. It is not alone implanted genes or a generation of animals that are claimed as intellectual property, but the reproduction of the whole organism, including future generations, for as long as the patent remains valid. To cap it all, the US patenting authority has in the meantime gone over to granting patents on specific features of organisms. The biotechnology company, Sungene, was granted a patent that applied to a type of sunflower with a very high oleic acid content. The successful patent claim pertained to this feature (i.e. the high oleic acid content), and not just to the gene that produced the feature. Sungene immediately informed sunflower growers that the development of any species whatsoever with a high oleic acid content will be regarded as an infringement of their patent rights. Expressed in semiotic terms, it is behaving in this case exactly as if someone could claim ownership not of a particular species of sunflower, but rather of the concept of "sunflower" as a whole, as long as oil content is one of its meanings.

Resistances

When property rights for new life forms are declared, it is on the basis of patent law, which considers that these forms are new and not found in nature. But when the "owners" are confronted with the consequences of releasing genetically modified organisms, then suddenly these life forms are no longer declared to be new. Mysteriously, they are once more natural and thus safe. For Monsanto and Ciba Geigy (now Syngenta), genetically modified, herbicide-resistant plant species make sense since they allow them to sell more herbicides (Roundup or Basta). It is cheaper for them to adapt the plants to the chemicals rather than the other way round, and the logical outcome is the development of plants that are resistant to the company's proprietary herbicides. Their release, however, can result in a transfer of resistance to herbicides to any related weed species in the wild and to the development of herbicide-resistant, and thus uncontrollable, "superweeds". In the tropics, especially, where species of weeds and crops have been subject to genetic exchange and have mixed freely for centuries to produce new types, both of these plant groups exist in close relationship to one another and the danger of gene transfer to related plants in the wild is considerably greater in regions of higher biodiversity. The granting of IPR on ecologically devastating plant species exemplifies a particular intent of capitalist translation: a system of total privatization of profits, with a total socialization of the costs.

Yet even before any genetically engineered manipulation, organisms can become the subject of patents. This becomes particularly clear in the interlinking of seed-hybrid-product. A seed is a means of production and, simultaneously, a product; as a result, seeds are a very particular type of capital with a specific biological

obstacle: they automatically reproduce and multiply in the appropriate conditions. Modern plant breeding and its prevalent expression in development aid in what is termed the 'Green Revolution' was primarily an attempt to eliminate this biological obstacle. This took place in processes such as hybridization whereby the seed is prevented from reproducing itself. This then gives capital a highly effective opportunity to get round the natural difficulties that arise during the transformation of seed into product. Hybrid types do not generate any fertile seeds and the farmers have to buy new seeds every year. The hybridization of the seed was an invasion of the seed itself and the new biotechnologies are merely a more modern tool to facilitate the transformation into a simple raw material of something that is both a means of production and, at the same time, a product.

Oppositions

In actual fact, the genetic modification achieved by farmers over thousands of years is far greater than the result of the systematic scientific efforts of the last one to two hundred years. In these traditional plant-breeding systems, seeds were and are treated as gifts and freely exchanged. So it can be established that biodiversity has always been a local community resource. Through patenting, biodiversity (in no way a simple natural product) is turned into private property, to which the public is denied any access. This allows one to conclude that patents are less concerned with innovation than with territorial claims so that they can function as instruments of territorial takeover. Whereas indigenous communities identified the useful features of plants, the communities themselves – along with their ways of life and their knowledge systems – are becoming dispensable.

Already since 1993, Indian farmers have declared a regime of common ownership against the impending biocolonialization of life. They declared their knowledge to be protected by *Samuhik Gyan Sanad* (collective intellectual rights). Therefore, whoever uses local knowledge or local resources without the local communities' permission is guilty of intellectual piracy and must answer to the local authorities. This form of resistance signalled the development of what are known as '*sui-generis*-systems', which establish collective intellectual rights. The practices of cybertechnological networks that exchange their data via copyleft systems or are subject to so-called 'GNU' licences, may also be regarded as *sui-generis*-systems.

For the Indian farmers, the right to produce, exchange, modify and sell seeds is also an expression of *Swaraj* or self-determination. *Satyagraha*, a movement that refers to the forms of non-violent resistance promoted by Gandhi as the "struggle for truth", has meanwhile strengthened to become a significant mass movement. The Zapatista uprising in Mexico, resolutely opposed at the very outset to the North American FreeTrade Agreement between Canada, the USA and Mexico and declaring that "the Free Trade Agreement is the death sentence for indigenous peoples", contributed to the organization of seed-exchange banks and to the fight against bioprospecting and biopiracy, at a regional and more recently a national level.

At the risk of sounding pathetic, I would like to conclude by calling for a resistance to trade-related intellectual property rights, to patents on life forms and to promote the use and development of free exchange systems of every kind. General forms of *potlatch*, giving and voluntary exchange are appropriate to diversify creativity and knowledge systems. We are directly dependent on this variety – let us continue to multiply it through translation.

[1] Valentin N. Vološinov, *Marxismus und Sprachphilosophie. Grundlegende Probleme der soziologischen Methode in der Sprachwissenschaft,* transl. by Renate Horleman, ed. By Samuel M. Weber, Frankfurt a. M./Berlin/Vienna: Ullstein 1975. The still unresolved question of whether V. Vološinov or Michail Bachtin should be considered as the author of this text may open up new perspectives for the investigation into the Leningrad Linguist Circle, going beyond the tight framework of biographical codification. See also the more detailed notes on this problem by Stefan Nowotny in the present issue.

[2] Ibid., p. 84.

[3] Ibid., p. 145.

[4] Ibid., p. 176.

[5] Vandana Shiva, *Biopiraterie: Kolonialismus des 21. Jahrhunderts. Eine Einführung,* Münster: Unrast 2002, p. 46. [English title: Shiva, *Biopiracy,* Cambridge: South End Press 1997].

[6] Jochen Graw, *Genetik,* Berlin: Springer 2006, p. 3.

[7] Vološinov, op.cit., p. 139.

[8] Francis Crick, "Lessons from Biology", in: *Natural History* 97 (Nov. 1988), p. 109.

[9] Ron James, quoted in: Shiva, op. cit., p. 34.

[10] Vološinov, op.cit., p. 74.

[11] See Shiva, op. cit., p. 35.

[12] After about 1953, more than a dozen Nobel prizes were awarded exclusively to research scientists in genetics and molecular biology. With one single exception, all these researchers received full or part funding from the Rockefeller Foundation.

[13] As well as the work already cited by Shiva, see for example: Vandana Shiva, *Geraubte Ernte: Biodiversität und Ernährungspolitik,* Zürich: Rotpunktverlag 2004; Shiva, *Biopiracy: The Plunder of Nature and Knowledge,* Toronto: Between the Lines 1997; or Shiva, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology,* London: Zed Books 1993. Further texts and interviews are available online; Z-Magazine regularly publishes her contributions, see: http://www.zmag.org; references to practice-related networking can be found mainly at the *Research Foundation for Science and Technology* (Vandana Shiva's homepage) at http://www.vshiva.net.

[14] John Locke (1690), *Zwei Abhandlungen über die Regierung,* Frankfurt am Main: Suhrkamp, 1998. [English title: Two Treatises of Government, Cambridge: CUP, 1988).

[15] Andrew Kimbrell, *The Human Body Shop,* New York: Harper-Collins 1993.