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**Not Having One's Cake, Nor Eating It:
Intellectual Property and "Indigenous" Knowledges.**

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"Knowledge is not simply another commodity. On the contrary.
Knowledge is never used up. It increases by diffusion and grows by
dispersion." (Uh huh)

— Daniel J. Boorstin, Librarian of Congress

"A Klee painting named "Angelus Novus" shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress.

--Walter Benjamin

1. Introduction

The Andaman and Nicobar islands of India, recently finding some exoticizing press,¹ are located in the Bay of Bengal and are home to several indigenous groups: the Onge, the Jarawa, and the Sentinelese.² Over the past few decades, the numbers of most of these

Mason (1994), Schmertz (1987).

²A number of anthropological works have described the lives, societies, and world-views of some of these groups. See for example, Cooper (1993a, 1993b), Mann (1979), Pandya (1990), Radcliffe-Brown ([1922] 1964). For a somewhat dated but still comprehensive bibliographical review, see Chawla (1981).

different groups have dwindled, their lifestyles have changed, and some of them are, literally, facing extinction.³

Recently, one of the scientists testing various plants that the Onges use therapeutically discovered that the Onges seldom suffer from malaria. Non-Onge populations, especially outside settlers, are far more prone to the disease. His tests revealed that one of the plants the Onge use against fever and gastro-intestinal disorders has anti-malarial properties. It appears to contain a highly bio-active component against the *Plasmodium falciparum*, the malarial agent. If the active ingredient in the plant can be isolated it may prove very useful for anti-malaria drugs, and very profitable for the pharmaceutical industry. The concerned scientist belongs to the Regional Medical Research Center (RCMC) of the Indian Council of Medical Research (ICMR), and has not released the name of the plant the Onges use. The director of the RCMC would like the findings to be patented and published in his own name.⁴ The designs of the director, and the virtual erasure of the indigenous group as an agent in a struggle that is now reconfigured as between the Indian government and the RCMC, become especially ironic in light of pronouncements by Indian politicians. At a recent meeting of the Convention on Biological Diversity (CBD), (the Second Conference of Parties (COP-II) in Indonesia in November 1995), the Indian minister for Environment and Forests, Rajesh Pilot claimed that existing intellectual property rights regimes are insufficient to protect the interests of indigenous⁵ communities and that additional steps are necessary.

³See Mukerjee (1995).

⁴The information I have used to describe the case is culled from Kothari (1995).

⁵The term "indigenous" whether applied to communities or forms of knowledge, remains deeply problematic. Its use in this paper, despite the recognition of its difficult status, should be taken primarily as a sign of my submission to dictates of textual convenience. At the same time, I distinguish the "indigenous" from "local", "hybrid", or "farmers", although these terms are often used interchangeably, especially when referring to knowledge. I deploy the term to refer to a complex system of signification which denotes groups that are seen to be culturally stable isolates (but usually are not), original inhabitants of a region (which they might have become only owing to their displacement by other groups), living in harmonious communion with nature and natural processes (which for the most part might simply be a

2. Property

Property can be defined as a relationship among actors with respect to things (Bromley, 1992). If I possess property in something, I possess the right and the capacity (an enforceable claim) to carry out one or more of a set of activities (access, use, consume, exclude, manage, even destroy) in relation to that object. I may, in addition, possess the right to delegate/transfer my rights and capacities for a consideration.⁶ When specific authors have focussed on one or more of these rights and capacities as being critical to ownership,⁷ they have sometimes confused ownership of rights and possession of capacities with ownership of things. For example, the right/capacity to transfer is critical as a prerequisite to ownership. But what is alienated in transfers of ownership are rights and capacities, not objects or things. In visualizing property in this fashion, we automatically move beyond questions such as "Is property a bundle of rights (or powers)?" or "What is the bundle of rights that is crucial to constitute ownership?" What you own are rights and capacities, they are also what is transferred. You can own an element of a bundle. You can own all the elements in that bundle. Ownership of different rights and capacities will produce different kinds of effects in relation

romantic projection), and under continuous threat of extinction from external forces (but reappropriation and active negotiation is often a significant part of the story). See Brush (1996a) for some of these points. "Indigenous" knowledge refers, as I use it, rather straightforwardly to the knowledge *and* resources these "isolated", "original", "natural", and "threatened", groups might possess.

⁶The discussion in this paragraph is indebted to long, continuing, and often, it seemed, absurd discussions with Jesse Ribot. No doubt he felt the same. I am grateful to him for forcing me to rethink my position on property by insisting that legal rights, under conditions of uncertain, and perhaps unenforceable, legal frameworks are insufficient to create property. I also acknowledge a long discussion with Ajaz Ghani on property and power. See also Ghani (1995). My final position, however, may have become one with which neither of them would want to have much to do!

⁷See Agrawal (1996, forthcoming), Alchian and Demsetz (1973), de Alessi (1980), Demsetz (1967), Furubotn and Pejovich (1974) and Schlager and Ostrom (1992) for a discussion of different sets of rules. See Schlager and Ostrom (1992: 250-1, 254-6) for a discussion of the differences between rules and rights, and de facto and de jure rights.

to some desired end. The notion that only bundles of rights constitute property, or ownership, implicitly depends on the notion of property as a thing, rather than as a relationship.

Rights and capacities are always contestable—legally or through force—and are often so contested through contradicting claims.⁸ It is at the sites of contestation that new allocations of property emerge. Rights and capacities are also always attenuated, but to differing degrees.⁹ Property is often viewed as falling into categories such as private, common, public, open access, government, and so forth. Such categories, while convenient as fictions to refer to broad classes of claims, are far too coarse to define the specificities of property relations. Further, such categorization often confounds two things: the allocation of particular sets of rights with the identity of actors in whom rights are vested. Private property, thus, especially in popular and policy discourses, is often assumed to establish a complete set of rights and capacities for individuals.¹⁰ Common property, it is similarly believed, never does so. Nothing, of course, could be further from the truth!¹¹ The distinctions between common, private, and other categories of property is more fruitfully made in relation to the actors on whom they confer property than in terms of the precise set of rights and capacities that are conferred;¹² "private" property may be attenuated rather than secure and complete, other forms of property may confer as complete a bundle of rights and capacities as "private" property (Agrawal, 1992).

⁸Rights confer capacities. The obverse relation also holds. But the two are surely different. Without a considerable overlap between the two, present when enforceable frameworks of property relations are present, the policy and practical import of the discussion of intellectual property and indigenous knowledge would be rather limited.

⁹See Furubotn and Pejovich (1974: 4-6) and Barzel (1989) for a discussion of the notion of attenuation in relation to rights.

¹⁰Clear specification, exclusiveness, security of rights, and the intactness of the bundle of rights are presumed to be critical to private property if it is to lead to economic growth. See de Alessi (1980, 1982), Libecap (1989), and North (1990).

¹¹See McKean (1996, forthcoming), and Ostrom (1990).

¹²See McKean (1996, forthcoming) and Schlager (1990) for an elaboration of this point.

In thinking the relationship between intellectual property rights and different forms of indigenous knowledge resources a specific aspect of property has assumed valence and significance: by assigning to a person property in some object, the flow of benefits from that object can be allocated; that is the incentive aspect of property. For property to serve as a mechanism for allocation, however, the following conditions must be fulfilled: a) the person must be legally recognizable, b) the object must possess the capacity to create a reliable flow of benefits, c) the assignment of property should be enforceable at a cost that is low in relation to the benefits from the object. Unless the assignment is enforceable, the consequent attenuation will imply a corresponding dilution in the capacity of property to serve as a mechanism of allocation.¹³ In this paper, I suggest that none of these conditions are easily fulfilled--if they are fulfilled at all--where property in indigenous knowledge resources is concerned. The paper seeks to address two other questions as well. First, are there possible grounds, or common characteristics, that indigenous knowledge resources share, inspite of their phenomenal diversity? Second, do these characteristics, at some more fundamental level than practical difficulties in assigning benefit flows, vitiate well-intentioned attempts to use intellectual property rights as a device to "protect" indigenous knowledge? The provisional answer to both these questions is, "Yes." I hope to provide a more nuanced and textured discussion in the course of reaching that conclusion.

3. Dilemmas of Indigenous People's Knowledges

The recent valorization of indigenous knowledges and institutions stands in stark contrast to earlier theories that saw in them only outmoded residues of a primitive consciousness, destined to disappear sooner or later under the pressures of modernization and spreading market forces. In the past two decades indigenous knowledge resources have moved

¹³Note the differences between my specification of the conditions for allocative tasks that property can perform, and the specification by North (1980), de Alessi (1980), or Libecap (1989) regarding the conditions under which property will lead to growth.

from being seen as significant in their own right, primarily by anthropologists,¹⁴ to being identified as critical to the development of those who possess indigenous knowledge resources.¹⁵ Today, the romance of the "indigenous" preoccupies a broad range of development professionals and consultants, and scholars within the academy.¹⁶ As interest in "indigenous knowledge" has grown, a large and diverse group of scholars, policy-makers, and business corporation officials, whose interests in indigenous knowledge are as diverse, recognizes in them the possibility of profitable investment as well. These changes have grown in the shadows of such developments as the abandonment of teleological theories of History,¹⁷ and the emergence of post-structuralist and new-historicist writings.

Where intellectual property issues are involved, the discussions on indigenous peoples and their knowledges typically take the following form: On the basis of their long-standing practice and use of particular biotic materials indigenous peoples can provide clues to resistant or productive crop varietals, insights into pest-control strategies and medicinal properties of plants, and point to other profitable opportunities.¹⁸ The knowledge about specific practices or

¹⁴A large literature from anthropologists had focused on forms of indigenous knowledge long before the currently fashionable resurgence of interest in the "indigenous" and "indigenous knowledge." See, especially, the seminal contributions by Berlin et al. (1974), and Conklin (1957, 1972). See also Berlin's recent work (1992) in a similar vein.

¹⁵Altieri (1987), Brokensha, Warren and Werner (1980), Compton (1989), Gupta, (1990), Moock and Rhoades (1992), Richards (1985), Warren, Slikkerveer and Brokensha (1991, 1995), and Warren, Slikkerveer and Titilola (1991) have made crucial and necessary contributions, often in collaborative volumes, to underline the potentially critical role of indigenous knowledge resources in the success of development initiatives. See also the various issues of the *Indigenous Knowledge and Development Monitor*, and the *Honeybee*.

¹⁶For a critical review see Agrawal (1995).

¹⁷New teleologies, of which Fukuyama's screed is one good example (1992), have also at the same time, become available. See also Derrida's fascinating de(con)struction (1994) of Fukuyama's *The End of History*, and the companion volume with provocative essays edited by Magnus and Cullenberg (1995).

¹⁸Schultes, speaking about native Americans in the Northwest Amazon, for example, says, "This native knowledge warrants careful and critical attention on the part of modern scientific

materials is often known to a large number of people within a group, to the extent that the identity of the original "inventor" is unknown. Because the cultures of indigenous peoples are threatened, the knowledge they possess may soon be lost forever. If utilized, however, to create products for a mass market, it can yield significant profits.

This situation raises ethical and managerial issues that abound in ironies. If indigenous practices become valuable, those who have created this knowledge can lose them.

Unscrupulous actors (read, large corporations), may gain the giant's share of benefits by commercially marketing a valuable product based on knowledge that initially came from indigenous peoples.¹⁹

The case I describe at the beginning of this paper echoes some of the relatively less tangled issues highlighted in the above general account as we consider whether and how intellectual property rights might serve as a vehicle to promote the interests of indigenous peoples, and facilitate the production and circulation of indigenous knowledges—both within indigenous groups, and outside their social sphere. The case presents an identifiable group, insular in its location, whose claims to a specific bioactive agent are relatively uncontroversial. It points to the divergence of interests between national governments and specific indigenous communities²⁰ by indicating the possible conflict that might emerge between the Indian government and the director of the RCMC. It also raises questions about whether the Indian government will permit the patenting of the isolated anti-malarial active ingredient in the plant (in light of its anti-IPRs rhetoric in international fora), about who will own the patent on the

methods. If phytochemists must randomly investigate the constituents of biological effects of 80,000 species of Amazon plants, the task may never be finished. Concentrating first on those species that people have lived and experimented with for millennia offers a short-cut to the discovery of new medically or industrially useful compounds' (1988, cited in King et al., 1996: 182).

¹⁹See Greaves (1994).

²⁰See Soleri et al. (1994: 25-6) for a discussion of the possible conflicts between interests of local communities and the nation state. Such conflicts have been widely noted elsewhere as well (see Kloppenberg, 1996: 3).

basis of what claims (the Onge who have been using the plant and have known its properties? the scientist who "discovered" the plant? the director of the RCMC?), and, finally, about how potential benefits from the isolation of the active bio-agent will be distributed (what will the Onge receive? how will infusion of cash into their hunting-gathering economy affect it?)

The fear of the potential loss of what has been discovered as valuable has prompted many advocates of indigenous knowledges to suggest the use of intellectual property rights such as patents, to protect the rights of indigenous populations, and resolve a number of dilemmas that arise as the perceived value of indigenous knowledges grows. Indigenous populations and indigenous knowledge resources exist primarily in the countries in the South, in marginal environments, and with populations that seldom have institutionalized access to capital or laboratory science skills. As a result, while indigenous populations often possess the knowledge to point to specific types of agricultural or medicinal plants that can prove profitable, they seldom possess the capacity to actually manipulate these plants to isolate the appropriate bio-active agents, or gene sequences that confer specific characteristics. The question, then, is distributive. Who possesses the rights to the benefits that might become available as the commercial value of indigenous knowledge resources rises? How are these benefits to be shared among the different parties? The ethical dilemmas would be less severe were indigenous populations not so substantially involved in the maintenance and protection of extant germplasm resources.²¹

Managerial issues relate to the familiar, if complex, question of a) creating ownership rights in indigenous knowledge resources that will then ensure reparations to the innovator(s) and b) whether and how indigenous knowledges can be protected in the long run? Intellectual property rights, by granting formal rights in indigenous knowledge to those who have preserved it, will allow them to negotiate rules of access and use, fees, and royalties, transfers

²¹It is also true that the most extensive collections of crop germplasm have already been accessed under the common heritage principle, and are to be found within a worldwide network of national and international centers, especially the collections of the CGIAR system. Many plants with unidentified medicinal characteristics and exotic trees with food values, however, still exist mainly in the "wild." See Kloppenberg (1996), Plotkin (1991), Plucknett et al. (1987), Posey (1985), Schultes and Raffauf (1990).

and management, with interested outsiders. At the same time, material benefits and guarantees of ownership, analysts believe, will also permit indigenous peoples to exercise greater choice about how their knowledges are to be used by others, and thus help safeguard the future of these resources.

Advocates of intellectual property believe that property rights will help indigenous populations gain the greater share of benefits from the uses to which their knowledge will be put (Greaves, 1994; Posey, 1990; Reid et al., 1992; Sedjo, 1988).²² Their proposals are based on the idea that innovations and knowledge are appropriate for patents and other forms of intellectual property (Sedjo, 1992; Vogel, 1994).²³ The justification for intellectual property as a safeguard for indigenous knowledges is simple. The overall argument goes as follows: Unless inventors are rewarded for their efforts and investment in trying to create a new product that is useful to the society, they would have no incentives to innovate. Indeed, if

²²See also various issues of the *Indigenous Knowledge and Development Monitor*. The notion that indigenous knowledges could be protected under the doctrine of "common heritage of mankind" should by now be obsolete owing to the radical differences in power and knowledge of biotechnology companies and indigenous peoples. Biotechnology companies can use recombinant DNA techniques that biotechnology companies use to create patents on new genetic materials, that might differ from naturally occurring DNA in significant ways, but still take advantage of genetically determined properties that have been identified on the basis of the knowledge of indigenous peoples. See Fowler and Mooney (1990) and Kloppenberg (1988). See Brush (1996) for a discussion that suggests indigenous knowledges should be protected on the principle of common heritage.

²³Apart from patents, which can be on the basis of design, utility, creation of new plants and other life forms, several other forms of intellectual property protection can also be availed--eg. copyrights, trademarks, publicity protection. A patent is a negative right--it does not create a claim to income, or the right to make or sell the invention that is patented. Rather, it prevents others from making, using or selling the patented product. Some of the criteria that must be fulfilled for patents (which are by far the most important of the different forms through which indigenous knowledge resources can receive protection under intellectual property rights) are originality, novelty, utility, and nonobviousness. These criteria are applied on an almost case by case basis, rather than possessing some clear and obvious meaning, especially in the context of biotechnology and indigenous knowledges. By extending protection under intellectual property, indigenous peoples who contribute to the creation of new products, it is believed, can be compensated.

inventions became common knowledge, returns from investing in their commercial production will be uncertain (since anyone would be able to use the knowledge in the public domain and go into business him/herself) and the invention might lie unused (Burge, 1984: 27).²⁴ Indeed, most economists would find an argument for indigenous knowledge on intellectual property grounds quite attractive. They would find strange bedfellows among those who might believe that because intellectual property rights are already there as a framework of possible support that is recognized and available, they should serve as the vehicle for helping indigenous peoples. A range of ethical and moral arguments, based on the notion that ownership of innovation rewards the inventor for the labor s/he has invested in his/her product, have been also made in favor of intellectual property.²⁵ Often, these arguments rest on some version of the original acquisition argument, as offered, for example, by Locke, and suffer the same weaknesses.²⁶

4. Indigenous Knowledges and Intellectual Property

Current formulations that advance intellectual property as the appropriate vehicle for helping indigenous peoples protect their knowledge resources possess a far too narrow view, however, of these resources. As is implicit in the entire discussion in the previous section, indigenous knowledge for most of these theorists is contained within the limits of what is profitable. They focus on its utilitarian aspects, ignoring the context in which it is produced

²⁴Burge recounts the story of Alexander Fleming who after discovering penicillin in 1929 refused to pursue patent protection so that commercialization and production could take place without anyone asserting monopolistic rights. Unfortunately, the result of this "fatal folly" was that for 14 years, no commercial manufacturer could be found who was willing to invest the needed resources to purify the drug and develop the techniques necessary for commercial manufacture (Burge, 1984: 27).

²⁵See Brush (1996: 155) and Penrose (1951) for an interrogation of ethical or "original acquisitions" justifications of property. Early attacks, familiarly, came from Rousseau, Proudhon, and Marx as well as anarchist writers.

²⁶See Simmons (1994) for a discussion and defence of original acquisitions arguments which have come under substantial attack and refutation.

and from which it gains its meanings. The primary objective of protecting indigenous knowledges becomes defined by the profit motive. But even a cursory look at the literature on indigenous knowledge shows the tremendous variety in forms and practices that would properly belong to the set of "indigenous knowledges". Table 1, without pretence to exhaustive or comprehensive categorization, lists some of the ways in which theorists have conceptualized indigenous knowledges.

(Table 1 here)

The different aspects and forms of indigenous knowledges possess quite different characteristics. Cultural practices, developing collectively, and collectively shared but in uneven fashion by the members of a given community, make sense primarily in relation to the specific imagined community that members share.²⁷ Technical knowledges of different kinds also develop collectively, but may be more easily transferable to other contexts, especially when their utility in treating particular human, livestock, or crop diseases, raising productivity, or addressing some other specific objective is obvious.²⁸ Biotic materials require some stretch to be conceptualized as indigenous knowledges. They are included in the category of knowledge because their discovery often hinges on access to indigenous peoples'

²⁷Of course, they may also retain values of exoticism, or touristic, developmental, or academic interest for individuals who do not share the lived cultural meanings of the members of the group.

²⁸This is not to suggest that cultural practices such as stories, poems, or folklore and folk music cannot "move" into other contexts. In both cases, appropriations from and by indigenous populations are possible and take place continually. Yet, adaptation and appropriation of cultural knowledges is likely to be more difficult and less obvious than for technical knowledges. The issue, in such cases of appropriation and hybridization is not whether to lament the loss of culture or knowledge, but to inquire about the terms on which the exchanges take place.

Second, while transfers to other contexts may or may not result in growth and changes in what was transferred, storage of indigenous knowledges in archives and libraries are likely to be far less conducive to their growth and transformation.

knowledges. Indigenous populations have been instrumental in ensuring the continued existence of many crop cultivars and land races by their conscious manipulation of flora around the world (Denevan and Padoch, 1987; Oldfield and Alcorn, 1991; Posey and Balee, 1989). An enormous range of plants that provide medical and food benefits might be extinct (or, at least far less common), were it not for the interventions of marginalized indigenous populations. Genetic materials, "discovered" through bio-prospecting, occupy an even more ambiguous position since little human intervention might have occurred to ensure their continued existence. Ethical issues of compensation are, nonetheless, raised because such prospecting takes place chiefly in tropical countries by researchers from developed countries.

In most of the discussion on indigenous knowledge and intellectual property, however, attention to cultural aspects of indigenous knowledges remains limited to the point of being absent. In two recent volumes (Brush and Stabinsky, 1996; Greaves, 1994), the papers dealing with how intellectual property rights can help protect indigenous knowledge focus primarily on the technical and utilitarian aspects of various indigenous knowledge practices rather than the social and cultural context within which these practices emerge and change.²⁹ What was missing was an examination of how the powerful and lop-sided stress on controlling knowledge through formal rights and rules might alter the social conditions within which indigenous knowledges emerge.

This tilted focus is evident whenever indigenous knowledge theorists attempt to make a pitch about the utility of indigenous knowledges in permitting their holders to develop, or in isolating better ways of solving problems. The focus, in these situations, inescapably and tautologically remains utilitarian. In their comprehensive collection of more than 70 papers about indigenous knowledge (Warren, Slikkerveer, and Brokensha, 1995), there is scarcely a paper that concentrates on "cultural practices" of indigenous peoples, thinks of indigenous knowledges in relation to the circumstances in which they are created, examines how

²⁹This focus finds obvious rapport with the writings of those concerned about loss of biodiversity. See for example, Ehrlich and Mooney (1983), Janzen (1986), Myers (1984), Terborgh (1974), Vitousek (1988), Wilson (1985, 1992).

abstraction (from the latin *abs* + *trahere* = away + pull; to draw away, to take out) from their context might affect them, or addresses the uses to which such abstracted knowledge might be put.³⁰

Despite the tremendous differences that mark various forms of indigenous knowledge, and the specific practices that are characterized as indigenous knowledge, I suggest intellectual property instruments such as patents or copyrights are poor tools to further the interests of indigenous peoples because of common characteristics that various forms of indigenous knowledge share. In other words, intellectual property rights, especially in the forms of patents and copyrights, are institutions that are likely to fundamentally alter the existing social grounds from which indigenous knowledge innovations stem, and in the process transform precisely those characteristics of indigenous knowledges which currently mark them as different.

To situate the argument that follows, it might be useful to mention that scarcely any indigenous legal system contains provisions for the safeguarding of intellectual property. In making a more or less uncoordinated search of customary law in different times and places, I came across many descriptions of laws on land and marriage relations, adultery and inheritance, tax evasion and abuse of office, but references to protection of ideas seldom appeared (Bohannon, 1957; Holleman, 1952; Hooker, 1980; Fallers, 1969; Lewin, 1947; Schapera, 1938; Wilson, 1961).³¹ The absence of legal institutions to protect ideas and innovations is evidence of a specific feature (as well as constitutive of that feature) of indigenous cultures. Their social practices around innovations are likely to be cooperative in orientation, and resemble public goods in their characteristics. This point is critical. It is

³⁰See Perdue (1994).

³¹Indeed, the law of patents and copyrights might date back more than a hundred years, but widespread social practices that explicitly take into account the existence of intellectual property law have begun to come about rather more recently even within western societies as many professors must have realized in the last few years in attempting to get around high prices of coursepaks. (But see also Lowie, (1928) cited by Brush (1996: 151) who speaks of rights in incorporeal goods such as ideas among primitive societies.)

corroborated to some extent in several recent descriptions. Brush, writing about Quechua potato agriculturists, says 'Quechua peasants there (in southern Peru) are rightfully proud of their knowledge of potato agriculture and their wealth of potato diversity. Potato varieties are exchanged without concern for proprietary control.... Likewise, these peasants use varieties from scientific breeding programs, without an intellectual property link anywhere in the chain between peasants and geneticists' (1996: 150). He makes similar comments about exchanges in Turkey and Mexico.³² Or see Nabhan et al. who remark, 'Many useful plants have left one cultural context to find a home in another. Few have been retained as the patrimony of only one family lineage, one farmer's field, or one medicine woman's bundle' (1996: 187). Richards (1996) implicitly points to the freedom with which genetic materials were exchanged when he describes selection of rice varieties in west Africa.

Certainly, knowledge within indigenous peoples' societies is not evenly and homogeneously shared. Specific kinds and aspects of knowledge may be known only to particular categories of people (defined by gender, age, occupation, learning levels...) within an indigenous group. But to the extent knowledge is distributed inconsistently, it is a function of secrecy rather than legally institutionalized regulations. If learnt by those who were not supposed to know it, legal recourse cannot be sought within the framework of customary law.³³ Because indigenous knowledges are usually shared widely within a given group, secrecy is not likely to help "protect" indigenous knowledges from external users.³⁴

³²Brush, however, also suggests that because knowledge is routinely treated as a public good in peasant and tribal societies, the scientist would seem justified in assuming that local cultural prohibitions are not violated in routine collecting. Whether cultural prohibitions are violated would depend on the uses to which the collected materials are put, and whether attempts are made to impose property rights.

³³An instance is cited by Greaves (1996: 29) with respect to Colin Turnbull's *The Forest People*. In the book, Turnbull reveals the source of the 'fearsome sound of the *Molimo*, a secret shared only among initiated adult males.' and not supposed to become public knowledge.

³⁴The collective orientation of the production and practice of cultural and technical knowledges is analogous to the degree of endemism/spread of organic materials. Private

A second feature of indigenous knowledge resources is important as well. As dominant groups have expanded and expropriated the more fertile and higher-rainfall regions, indigenous groups have been pushed to the margins of development, spatially as well as figuratively. They are the Other who lives beyond frontiers. Residing today, for the most part, around and in forests, semi-arid and variable rainfall areas, and on the outskirts of irrigated and intensively farmed areas, indigenous groups are and have been forced to survive in *relatively* isolated social and spatial environments. If development and social change have taken place unevenly around the globe, they are the peoples inhabiting the regions where Klee's angel of History looks back on the "ruins" in his wake (Benjamin, 1968). It is in these environments that indigenous populations have created institutional forms, cultural repertoires, and technical innovations, that today seem valuable to those who are interested in using and protecting indigenous knowledges.³⁵ If indigenous peoples have been able to generate knowledges that today seem valuable in light of advances in gene manipulation techniques, it is, at least partially, owing to the lack of interest that they received from powerful social actors within the heart of capitalism and capital-intensive technological industries.

If it is plausible that the above two features--collective orientation and marginal location--are common to various forms of indigenous knowledge, the extension of intellectual property protection to indigenous knowledges is likely to authorize the very processes that contribute to the ongoing transformation, even erosion, of indigenous knowledges and marginalization of indigenous populations that it is supposed to redress. The history of the overdeveloped world shows the centrality of property in ideas and knowledge in its development. Increasing reliance on capital- and knowledge-intensive production, the constant search for a wider field of raw materials and market operations that are ever more dependent

rights, created by legal artifacts, would be analogous to resources that are highly endemic, immobile, and non-replicable. Few indigenous knowledge resources, however, possess all these characteristics.

³⁵Ironically, these are also the areas which are seen to constitute the mega-diversity spots in the world (Alcorn, 1994; Balick et al., 1994; Juma, 1989). In other words, there is a strong spatial correlation globally between biological and cultural diversity.

on intellectual products, the expanding circle of consumptive exchange based upon manipulation of symbols, all hinge upon the possibility of property rights in ideas and innovations. The intellectual property system, traceable to the beginnings of the industrial revolution, has similarly, continually helped expand the realm of what could be considered a commodity.

There are at least two ways in which the incorporation of indigenous knowledges into an intellectual property regime strengthens the material forces that have contributed to shrinking the space within which indigenous knowledges are today presumed to be found. Because capital- and knowledge-intensive medical and agricultural industries depend on gargantuan-scale production and homogenization, the appropriation of intellectual products from indigenous innovation will further reduce the diversity in productive relations and activities upon which indigenous innovation depends. One of the lessons of the history of technological innovation is the multiplying requirements of capital for new innovations and more efficient production. Such processes further distance consumers from developing any capacity to contribute to innovations in the production process.³⁶ The commodification of biodiversity and technical aspects of indigenous knowledges, thus, consumes its very source.

The extension of legal protection to indigenous knowledges through the extension of contract-based intellectual property rights is problematic at a more fundamental level as well by contributing to transforming the cooperative nature of knowledge production.

The system of patents constitutes a critical step in altering the notion of the inventing subject. In creating the legal subject, to whom accrue the benefits from innovation—the actions of the aesthetic subject—patents attempt an uneasy conjoining of two very different conceptions of the self. The notion of the aesthetic self is based on the conception of creativity as a self-realizing activity. In this view, the urge to craft something novel and original which would be an inalienable product of one's labor and intellect, is ultimately to be traced to the transcendental will to realize oneself. In several accounts, where indigenous peoples want

³⁶ The situation among most indigenous peoples is quite the opposite: the producers of innovations are also the consumers of the products of innovation.

nothing except the recognition of their contribution to the creation of a particular product, this very dynamic of the innovative self is at work (Soleri et al., 1994).

Of course, whether there is a transcendental self at work, or whether the notion itself is the product of a conjunction of historical forces that permit the inventor to acquire an expressible interiority and the activity of indigenous innovation to be an activity through which this interiority can be realized, is a whole another question. What is important to note, however, is that the legal personae that intellectual property rights offer are very different in nature from the demands of an aesthetic, "transcendental" self. The patent confers a negative right—which, for the period that it is operative, would prevent others from benefitting from the fruits of the inventor's labor. Unlike the self-realizing subject, whose work of art can never be alienated from him/her, the rights granted by patents are clearly alienable, as also are the benefits that might accrue from such rights. They are property. Nothing prevents them from being transferred for a consideration.

Certainly, these and other notions of what it means to constitute the self may be historically contingent.³⁷ But the nature of the current historical contingency, in creating the notion of what is valuable in the indigenous, is quite unprecedented in the interactions of indigenous groups with those who are non-indigenous. The vesting of exclusive rights to indigenous knowledge resources in legally recognized actors destroys the incentives to maintain a collective orientation in the production of indigenous knowledges.

The loss of a collective orientation may not be a foregone conclusion. It depends on the manner in which rights are created, how communities as legal persons are constituted, the identity of the actors who enter into contracts, and the extent to which community representatives are accountable to community members. But as we have already seen, identifying individual indigenous innovators is likely to be extremely difficult owing to the

³⁷A number of works elaborate on the historically contingent constitution of the self. See the discussion by Mauss in Carrithers et al., (1985) for a discussion of how puritannical sects first used specific techniques for constructing, monitoring and controlling a self. Foucault's examination of the ethical practices in late antiquity provide another account of the same phenomenon ([1985] 1990).

hitherto collective and cooperative orientation of indigenous innovation. For the same reasons, enforcement of intellectual property, where property is vested in collective actors, is likely to be a quite difficult matter. As intellectual properties create incentives to align rewards with efforts, the cooperative orientation of indigenous knowledge production is certain to be undermined. If new indigenous institutions to regulate knowledge production do not attempt to establish a correspondence between rewards and efforts, allowing their indigenous knowledges to be circulated freely, individuals within the group will have considerable incentives to exchange those aspects of their group's knowledge with others that are deemed valuable. Such exchanges will undermine the viability of the newly established institutions to regulate knowledge production.

Catachresis

In making the argument that indigenous knowledges are in some respects, indeed, in some foundational respects, likely to be altered by the resort to the patents and copyrights system it is important not to ignore the history of changes and exchanges, transformations and modifications, and shifts and resistances, that have marked them already. Had indigenous peoples not possessed remarkable capacities to change through the dynamics of their own social processes as well as in response to external influences, the world would already be a far more flattened one. What Tsing says, talking about Meratus travel and the negotiations between local and global discourses, might well be an allegory for negotiations between indigenous and non-indigenous cultures: "Meratus travel opens transcultural conversations that bring extralocal concerns into local negotiations of leadership, gender and community. Travel creates heterogeneous Meratus histories situated unevenly within wider historical movements. The local character of Meratus travel does not isolate Meratus culture. Rather, Meratus travel stimulates critical reflection on the cultural specificity of metropolitan travel agendas" (1993: 150).

Various indigenous groups, in their interactions with outsiders, have demonstrated similar capacities to open transcultural conversations and bring extralocal concerns into local negotiations of power and conflicts. The current concerns about the erosion of indigenous

knowledges are, at root, concerns about the acceleration in the interactions of various indigenous groups with their non-indigenous neighbors. Ultimately, these concerns are driven by the terms on which indigenous peoples interact with their more powerful neighbors and with the bureaucratic and political actors in the nation-states in which they are located. The introduction of intellectual property rights as the criteria on the basis of which the value of indigenous knowledges will be judged is likely to shift dramatically the grounds on which such judgements were made earlier. It is likely to create unequal partnerships between some individuals who belong to indigenous groups and other persons who are interested in the knowledges that these individuals possess.

Clifford, in his essay, "Ethnography as Allegory," speaks of the ways in which certain grand themes persist within the ethnographic imagination (1986). To the allegorical themes he skillfully delineates—the noble vs. the corrupted savage, cooperative vs. conflictual cultures, cultural loss vs. redemption, the exotic Other vs. the universal essence of Man—one might add "resistance and adaptation in response to intrusion vs. erosion and destruction as the result of contact." In the literature on indigenous knowledges all of these allegories come together, seemingly in a welter of confusion, but perhaps also unconsciously crafted to match already existing visions. This creates the central paradox in textual representations of indigenous knowledges and peoples in relation to intellectual property rights. If all descriptions of indigenous knowledges are already prefigured, what credence can we place on these descriptions?

The allegorical readings to which one might subject the account of the "indigenous," during the process of writing as well as in the moments of interpreting the written, also create effects of their own. To borrow a word from Saunders and Hunter (1991), such readings flatten the possibilities inherent in the trajectories of change all social groups undergo. The more important questions seem to relate to the terms and conditions under which change, or "negotiation," takes place. Allegorical readings, however, shunt indigenous peoples and their actual experiences to the margins of the theoretical imagination in the very moment that the use of the "indigenous" allows them to be constructed. The choice, then, cannot possibly be

between the allegories of "intrusion, resistance, and adaptation," and "contact, erosion and loss." Allegories are all equally inattentive to history.

In the context of intellectual property and indigenous knowledges, the lesson of history seems to be that patents and copyrights constitute an unprecedented alteration in the terms on which indigenous peoples have created innovations. The introduction of intellectual property is likely to force innovation towards a calculus of costs and benefits that is privately rather than collectively oriented.

I believe indigenous peoples, and those who wish to further the development of their knowledges on terms that would put indigenous peoples in control, are caught on the horns of a dilemma. This dilemma arises from the current intense interest in their knowledges and cultures. Without control over their intellectual products, their knowledges stand to be expropriated without any material benefits reaching them in exchange. But by taking recourse to intellectual property, even if some individuals within indigenous groups capture gains as individual persons, their existing arrangements of knowledge production will be radically transformed. Ultimately, perhaps, we must come to terms with the conclusion that "indigenous" knowledges cannot survive as long as interest in them endures on the part of powerful economic and political actors.

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