The Wonders of the Coca Leaf

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This article briefly describes the beneficial qualities, constructive uses, and profound cultural significance of the coca leaf for the indigenous Andean peoples highlighting examples from Bolivia – a country in the vanguard of the defense of the sacred leaf. More specifically I will describe the natural coca leaf's renowned nutritional and therapeutic qualities, explain how coca has been used for millennia as a ritual tool for divination, social interaction, and as a link to deities and the mother earth that they worship. I will also explain how coca became institutionalized as a key cultural symbol of solidarity, identity, and resistance for the native Andean people in the face of colonial and neocolonial domination. I will then describe the implications of the recent boom in the economic value of coca caused by the increased demand from the cocaine industry, combined with pressures to completely outlaw and eradicate the coca leaf. These contradictory foreign demands for the drug cocaine and for the prohibition of the natural coca leaf threaten to deprive the traditional consumers of their coca, thus creating a powerful social force of rebellion arising in defense of the traditional meanings and uses of coca in the face of threats to this traditional way of life and the very identity of indigenous Andeans. I conclude this historical analysis by bringing us up to date on constructive uses of the leaf in wider society and the current struggle to recognize the coca leaf as an intangible heritage of humanity and access to its many beneficial qualities a basic human right for everyone.

The Historical Use Value of Coca as a Food and Medicine

Archaeological evidence has confirmed that the coca leaf has been cultivated and used by the indigenous people of the Andes region for at least 4,000-5,000 years while other estimates put this as far back as 20,000 years. By the time of the Spanish colonial conquest, coca use extended all the way from what is today Costa Rica and Venezuela, through the Brazilian Amazon (coca's place of origin) and on down to Paraguay, northern Argentina and Chile. (Abruzzese 1989 p.95, Esch 2007, Henman 2008, ADEPCOCA 2006 p.3, LAB 1983 p.17, Forsberg 1992 pp.72-73).

Today, "Coca chewing and drinking of coca tea is carried out daily by millions of people in the Andes" (TNI 2008a). Unlike the recent destructive[1] use of the pure alkaloid cocaine[2], the long history of the coca leaf in the Andes been characterized by a constructive use of this alkaloid (in extremely low doses) along with a myriad of other nutritional and medicinal substances found in the leaf. Many studies of coca have shown the leaf to be rich in many important vitamins and minerals[3] which are not readily available to the mountain peasants due to the difficulty of cultivating or obtaining fresh vegetables in the Andean highlands. Coca thus serves as a non-perishable "dry salad" in the mountain peasants' starchy diet. Since this population often suffers from lactose intolerance, coca provides one of the few sources of calcium available to the peasants of the altiplano. Compared with other foods, coca has been scientifically proven to be one of the most (if not *the* most[4]) nutritious crops grown in the region. Coca has more vitamin A than carrots, twice the calcium of milk, and is also rich in phosphorus, potassium, iron, vitamins B2 and E, carbohydrates, fiber, and proteins. Chewing 100 grams of coca is enough to satisfy the nutritional needs of an adult for 24 hours. While Henman & Metaal (2009) point out that daily coca consumption rarely exceeds one fourth that amount, coca can still be considered an important food supplement. (Henman & Metaal 2009, Mittrany 2007, Duke et al 1975, Weatherford 1987 p.416, Hurtado 2004b, Hurtado 1995 ch.2, Mittrany 2007, Plowman 1986 pp.6-7, Kurtz-Phelan 2006, Aliaga 2007, Friedman-Rudovsky 2008, cocagrowers.org 2005, Hausfather 2009, Vidaurre 2001, Forsberg 1992 pp.73-77).

While some have claimed in the past that "coca chewing results in loss of appetite and reduced consumption of food" (Buck 1968), a study called Coca Chewing and Diet by Burchard (1992) shows that coca chewing and food consumption are not only complementary activities, but that chewers tend to eat more and have better overall nutrition compared to non-chewers in the same survey (see also Bolton 1976, Forsberg 1992 p.78).

In some ways coca could perhaps be compared to a fine wine taken with meals. Indeed, the coca chewers themselves have their particular preferences for the variety of coca they like to chew. According to Parkerson (1989 p.278), in Bolivia most chewers prefer coca which comes from the traditional growing area of the Yungas (higher in altitude than the Chapare) as it tastes sweeter because of its lower cocaine content (Carter et al. 1980a p.164, Forsberg 1992 p.77).

Given the widespread problem of poor nutrition in the region, it would be wise to consider the potential of coca to combat hunger. Maria Eugenia Tenorio, Bolivia's best known coca cook explains that "If Bolivians just started cooking with coca; they could solve most of the problems of malnutrition here." The current government of Bolivia is implementing a project to expand coca leaf production to produce coca flour to supplement various food products. Bolivian Foreign Minister David Choquehuanca even "suggested the leaf be used in school lunches across Bolivia, allowing Bolivian children regular exposure to the leaf's nutrients" (Esch 2007, ADB 2007, pp.30-34). Unfortunately, the confusion between natural coca leaf and the highly refined drug cocaine initially caused a negative reaction to these proposals amongst the uniformed public. Scientific evidence indicates that eating food products made with coca flour results in negligible absorption of the leaf's alkaloids[5]. This is because when coca is cooked most of the cocaine alkaloid is lost as it cannot withstand such high temperatures. The minor traces of cocaine remaining are broken down and metabolized by saliva and the digestive juices of the human body (Arie 2006, Khukita 2007, Aliaga 2007).

Chewing coca[6] has long been the most common way to consume the leaf. Much research has shown that this practice also provides economic benefits because coca use increases worker productivity[7] in agriculture, fishing, and mining. Even when chewed, natural coca leaf is only a mild stimulant. Taxi, bus, and long-haul truck drivers find chewing essential to safe night driving as it helps to keep them awake and alert; many college students and intellectuals assert that coca chewing allows them to concentrate on their studies and that it improves their comprehension (Argandoña 2006, Keane 2007a, Hausfather 2009).

Coca tea is very popular throughout the country as a medicinal beverage and can be found in virtually every household and "is served everywhere, including the finest hotels and the U.S. Embassy." In Bolivia's business sector offices, coca tea is often served rather than coffee. It is perfectly legal and is "often given to visitors, like the pope, who suffer from altitude sickness . . . [and] is used for discomforts ranging from headaches to labor pains[8]" (Report on the Americas 1989 p.28, Ledebur 2008 p.2, Shultz 2008, Forsberg 1992 pp.77).

The medicinal qualities of natural coca make it the preferred remedy for a surprisingly wide variety of ailments. Coca leaves "are used as infusions, poultices or dusts . . . they are very effective when people have dizziness or head aches, throat affections and stomach problems . . . (and) in order to relieve rheumatism and bone dislocations" (cocamama.com). In addition to its ability to reduce pain, coca is an effective antidepressant and mood elevator. Rich in soluble calcium and phosphorous, coca helps prevent osteoporosis and tooth decay. Coca is also an effective tonic for cardio-vascular health. As a regulator of blood sugar, it is used to treat diabetes, and has slimming properties which can help reduce obesity (Henman & Metaal 2009, cocamama.com, Silvia Rivera in Knoll 2007, Langman 2006b, Plowman 1986 p.8, Martin 1970; Fabrega and Manning 1972; Hulshof 1978; Carter et al. 1980a & 1980b; Weil 1981; Grinspoon and Bakalar 1981).

But these beneficial qualities and uses of coca do not adequately reflect the true importance of coca for the Andean people, or why coca cannot be considered just another commodity to be bought and sold according to world market prices.

The Traditional Meanings of Coca and its Development as a Symbol of Ethnic Identity

When the Spanish first conquered the Incas in the sixteenth century, there was strong pressure from the Catholic Church to eradicate coca because of its important non-Christian meanings and symbolism for the indigenous Andean religions. Coca has long been used to divine the future, and as a sacred offering to the mother earth and ancestral deities recognized by native Andeans. In 1551 the Bishop of Cuzco imposed capital punishment for consuming the leaf, as it represented in his eyes an "agent of the Devil". 1560 saw the first attempt to completely eradicate the leaf by the Spanish Viceroy of Peru - Francisco de Toledo. Then in a complete reversal thirteen years later, the Spanish Crown ordered that coca cultivation continue and promptly began to tax it. "The Spaniards stepped up the cultivation of this shrub once they discovered that its use increased the output of Indians working in the mines." While conversion of the Indians to Catholicism was one of the ideological goals of the conquest, the economic imperatives of precious metal extraction took precedent over Christian morality. (Labrousse 1990 p.335; Parkerson 1989 p.289, Capajaña Surco 2006 p.3, LAB 1983 p.19, ADEPCOCA 2006 p.16, Hurtado 2004b, Roncken 2006, Silva 2007, Forsberg 1992 pp.78-80).

Not only did the Spanish step up production, but they also took over control of coca cultivation and established new coca plantations in the tropical Yungas foothills. They soon began to turn handsome profits by providing coca for the mining town market. "At the beginning of the twentieth century coca production was still making fortunes for the large landowners in the *Yungas* in the Department of La Paz, Bolivia" (Labrousse 1990 p.335, Forsberg 1992 p.79).

The commodification of coca is therefore nothing new, but merely an intensification of a process begun 450 years ago. Eventually even Cuzco's Cathedral came to rely on the tithe of the coca trade for most of its revenues (cocamama.com). The morality of the coca leaf was not only redeemed by the Church, but actually came to be promoted by Pope Leon XIII in the 19th century. He allowed his picture to appear on the label of coca leaf based Mariani wine, and bestowed a gold medal to the inventor, in recognition of the wine's ability to "support the ascetic retirement of his holiness." The coca trade became truly globalized in the late 19th and early 20th centuries when the sale of such coca leaf-derived products flourished (Argandoña 2006, Escohotado 1999 pp.446- 447, label pix 1, 2, Rivera 2007, Forsberg 1992 p.79).

Just because the Spanish elites made profits from coca does not mean that they had respect for the leaf, however. Many of the other gifts of the new world were readily adopted and transmitted to the old world, but "the *akullico* (ritual chewing) of coca . . . had a quite different fate." Evidence exists that some Spanish living in the new world chewed coca and that Spanish women living in the high altitude city of Potosí often drank coca tea for medicinal purposes. However, most Spanish considered it to be "a dirty habit practiced only by, if not savages, at least inferior peoples"(Carter et al. 1980a p.164, Carter et al. 1980b p.79, Capajaña Surco 2006). This general rejection by most of the Spanish resulted in coca becoming a symbol of ethnic identity and resistance by the indigenous people to imperialism and foreign colonial domination (Forsberg 1992 p.79).

These meanings and the symbolism of the coca leaf for native Andeans have carried through to contemporary times. Today coca is still traditionally employed in indigenous polytheistic religious ceremonies. Coca also signifies "the presence of social and spiritual bonds" between the people and their land (Allen 1988 p.32). As we shall see, coca continues today to be an important symbol of indigenous identity and resistance to neocolonialism[9].

Coca as a Tool for Social Interaction and Spiritual Protection

In addition to its religious significance[10], nutritional benefits, and medicinal qualities, one of the most important functions of coca is its traditional use as a ritual tool for social interaction, coherence, and exchange in Andean society. Coca is not just a food supplement or medicine to the native Andean people, but it is also a ritual tool which has great meaning to the participants who use it. "Coca chewing carries a way of life with it ... [to chew is to] affirm the attitudes and values -- the habits of mind and body -- that are characteristic of Indigenous Andean culture ... it is how the Ayllu[11] coheres as a social entity" (Allen 1988 pp.22-23). To a non-Andean person, coca probably holds little significance beyond that of a flavoring for their favorite soft drink, or at best as a nutritional and medicinal leaf. But for the indigenous Andean people, it embodies important values and profound beliefs which cannot, and must not be ignored (Forsberg 1992 pp.80-82).

"Coca expert and founder of the La Paz Coca Museum, Jorge Hurtado, points out that in the rural high plains of Bolivia, 92% of men and 89% of women are regular coca chewers. He writes, "[Chewing coca] is a powerful symbol of group identity and solidarity….One could say that the coca leaf is the backbone of the cultural structure of the Andean region" (Hurtado 1995, Esch 2007).

Within the close knit rural community, communication and reciprocity is of primary importance. The social practice of coca chewing, known as *akullico* in Bolivia, is a ceremonial act requiring proper etiquette. It is often a communal activity of sharing which involves a complex choreography of preparation, invocation, and reciprocal offerings to be done properly. Coca truly symbolizes the sense of community solidarity and relative harmony so important in Andean society (Forsberg 1992 p.80).

> "Given the connotations of generosity, pleasure and of co-fraternity that coca has, it plays a very important role as 'lubricant' of reciprocal exchanges, facilitating and propitiating the appropriate climate in which these exchanges take place. The reason is that not only is coca offered, but it is also consumed at that very moment. The ceremonial and often ritual act of ingesting fresh coca leaves in a group, surrounded by friends, creates an atmosphere of fraternity and feelings of solidarity which are indispensable for carrying out reciprocal exchanges" (Mayer 1986 p.7).

While not really intoxicating, coca's social and cultural significance to the traditional chewer could perhaps be likened to the meanings and uses of the martini lunch of the Western business world, the round of beers among friends at the local tavern, or even to that of the communion wafer and wine consumed in a ritual communion by many Christians. Some Andeans actually describe coca as a sacrament and refer to it as "the host" in an explicit analogy (Allen 1986 p.42). In fact, the coca leaf is so integral to Andean society that it is still used as an informal currency in some farming communities" (Esch 2007, Silva 2007, Forsberg 1992 p.81).

These examples, however, cannot adequately convey the central importance of coca for native Andean culture:

> "In the entire world there is not a single drug, the raw materials of which so permeate an entire culture or society. The phenomenon of coca in Bolivia and Peru is unique in all the world" (Carter et al. 1980a p.164)

In summary, coca is very valuable to the people who have traditionally cultivated and consumed it for thousands of years. It has use value as a medicinal plant used to maintain physical and mental health at high altitude, and as a rich source of nutrients vitally important to a balanced diet. It also has cultural value as a symbol of cultural identity, solidarity, and resistance to colonial domination, is a tool central to social interaction and exchange, and has powerful ecological and religious significance[12] (Forsberg 1992 pp.80-82).

Coca and the Western World
A History of Substance Abuse and Political Pressure

It may be difficult for outsiders to understand the truly mystical significance the coca leaf has for many native Andeans. This is especially true for an outsider whose only exposure to coca has been in the form of cocaine. The North American author Catherine Allen (1988) speaks of her encounter with such ethnocentricity:

> "Young tourists in Cuzco often rush out to buy coca leaves and are disappointed when they feel little effect. The careful, elegant (native Andean) Francisco Quispe spoke to me about my 'countrymen' whom he had seen at the ruins at P'isaqu stuffing wads of coca leaves into their mouths with no concern for propriety, or for the respect due the leaf itself. 'They were like horses,' Francisco said with quiet disgust" (p.224).

A new use for the leaf was discovered between 1855 and 1860. Two German scientists, Goedeke and Niemann, are given credit for having first extracted the pure cocaine alkaloid from coca leaves. While the coca leaf had long been used in Andean medicine to alleviate pain and suffering, the discovery of cocaine resulted in the development of the first local anesthetic in Western medicine. In 1884 Viennese ophthalmologist Carl Koller performed the first operation using cocaine on a patient with glaucoma. This new drug was not only completely legal then, it was ***officially promoted*** by the US government and Western medical experts as a wonder drug and panacea for a wide variety of ailments. Cocaine became very popular throughout the West being an ingredient in many different medications and elixirs including the first Coca-Cola (cocamuseum.com, Pendergast 1993 p.55, Gootenberg 2003 pp.3-14, Calatayud 2003 pp.1505-1506).

It is important at this point to distinguish between the highly concentrated drug cocaine and the natural coca leaf. A majority of scholars agree that while natural coca leaf has many medicinal qualities, it is not a powerful drug:

> “Enrique Mayer (1978 p.849) has likened the difference between coca chewing and cocaine use to the difference between travelling by donkey and travelling by jet plane” (Allen 1986 p.35). “It is obvious that the person chewing coca leaves will not get "high" or a "dope"” (cocamama.com). “Only trace amounts of the cocaine alkaloid used to produce cocaine exist in the leaf itself, rendering the plant benign” (Esch 2007). “Trying to compare coca to cocaine is like trying to compare coffee to methamphetamines, there’s a universe of difference between the two. Coca is almost impossible to abuse in its natural state” (Sanho Tree in Dangl 2007a p.38). “To those (including, evidently, a good number of global policy makers) who think that drinking coca tea or chewing coca leaves will offer up something akin to an excursion on LSD or magic mushrooms, think again. It's "kick" is almost unnoticeable, nothing in comparison to a "Grande" (Spanish for "big", Starbucks for "small", go figure) cappuccino. In this regard, as both a drinker of coca tea and an addict to afternoon caffeine, I speak with authority” (Schultz 2008)

It was only in the first decade of the twentieth century that cocaine abuse was recognized as a problem and became illegal first in the United States and eventually worldwide after which its use declined until the early 1950’s and boomed again in the 1980’s (Labrousse 1985 p.66; Cintron 1986 pp.43-45, Coca Museum, Gootenberg 2003 pp. 34-37, Forsberg 1992 p.84).

Attempts to control cocaine and the supply of its raw material - coca leaf - are therefore nothing new.

> "The twentieth century has seen strong international pressure on Bolivia to eradicate, or seriously curtail, the cultivation and consumption of coca. Much of this pressure has been channeled through major international organizations such as the League of Nations and the United Nations. With important members of the La Paz elite dominating the production of coca leaf, it is not surprising that the Bolivian government steadfastly resisted such pressure and defended coca prior to the revolution of 1952. The only control placed on coca was for the purpose of taxation, which has provided an important source of revenue for the government since colonial times" (Parkerson 1989 p.290).

Why moves were made to ban both the drug cocaine and the natural coca leaf itself however remains a mystery[13]. Coca contains only trace amounts of cocaine (between 0.5% and 1%) and this drug is quite difficult to isolate and extract without advanced scientific knowledge, a slew of precursor chemicals, and a high-tech chemistry lab. Natural coca leaves "would need a chemical process with elements such as tartic acid, pure clorhidric acid, ether, and anhydrous soda sulphate, in different determined temperatures, in order to finally produce cocaine" (Henman & Metaal 2009, cocamama.com, Gootenberg 2003 p.18, Esch 2007, Dangl & Howard 2007b, Schultz 2008).

In summary, natural coca leaves are not a drug, and it is quite difficult to make drugs out of coca. Indeed coca specialists such as Silvia Rivera and Jorge Hurtado assert that coca leaf "even cures people who are addicted to crack and cocaine." (Henman & Metaal 2009, Dangl 2007a p.39, Hurtado 2004b, Williams 2008 p.11, Schultz 2008, Friedman-Rudovsky 2008, Plowman 1986 p.9, Weil 1981, Forsberg 1992 p.84-86). Nevertheless as we shall see, the international community came to demonize and eventually outlaw the nutritional, medicinal, and sacred coca leaf in a move that essentially throws the baby out with the bathwater.

Development of an International System of Control
Coca Taken Prisoner

Positive perceptions and the active promotion of coca leaf derived products and the drug cocaine ended with a complete reversal in the early 20th century as their reputation changed "from one of high international prestige to becoming condemned and ultimately prohibited by the international community" led by the prohibitionist crusade of the United States (Julio Cotler commenting on Gootenberg 2003 p.47). Campaigns and laws against the drug and later the leaf arose just as artificial substitutes for cocaine began to appear as early as 1905 when the patented Novocain (procaine hydrochloride) was introduced into the practice of medicine by Professor Heinrich Braun. Initial moves to ban the coca leaf itself occurred shortly after the 1923 invention of the first synthetic cocaine molecule in Germany by Richard Willstätter and the Merck Laboratory. For the first time, cocaine could be created in a laboratory without the imported supply of coca leaf. In 1925, under pressure from the United States, the League of Nations *2nd Conference on Opium* declared coca to be "harmful to health" and the effort to impose a worldwide ban on the sacred leaf began (LAB 1983 p.28, Hurtado 2004b, http://cocamuseum.com/galeria/26.htm, Gootenberg 2003 p.18, Calatayud 2003 p.1505).

In reaction, Bolivian coca producers sponsored studies in 1928 and 1948 on the benefits of coca consumption in order to counter this prevailing opinion, but to no avail. In 1949, the new United Nations in New York put banker and president of the American Pharmaceutical Society - Howard Boardinghouse Fonda - in charge of a UN research commission of enquiry into coca and coca chewing[14] in Bolivia and Peru now known as the ECOSOC study. After a 3 month study "inspired by colonial and racist sentiments rather than science", Fonda concluded that: "the habit of chewing could be held responsible for malnutrition and immoral behavior of the 'Andean man', while reducing his productive capacity" (TNI 2008a) and that "the use of the coca leaf is without a doubt harmful and possibly it causes the racial degeneration of the Indians." Fonda's ethnocentric bias is most evident in his argument that the complex choreography involved in preparing the *akullico* is a waste of time and an anti-economic practice. The study's findings recommended a governmental policy "to limit the production of coca leaf, to control its distribution, and eradicate the practice of chewing it" within *five* years (TNI 2008a, Gootenberg 2003 pp.19-20, Argandoña 2008, Ledebur 2008 p.2).

In the face of centuries of evidence by the Spanish crown that coca is a stimulant that improves worker output[15], Fonda concluded after his brief ECOSOC study that chewing coca leaf is harmful to health and to the economy, and could be blamed for the 'laziness', low economic output, and underdevelopment of the Andean people. This opinion would determine the world-wide persecution of the coca leaf and remains the only technical and legal basis for the prohibition and eradication of the coca leaf. The findings of this sole "bible" of coca related policy continues to rule to this day in the face of overwhelming scientific evidence to the contrary. Fonda's findings in the ECOSOC study became formalized in the 1961 Single Convention on Narcotics[16] of New York which was ratified by the government

of Bolivia during the dictatorship of Hugo Banzer Suárez. This new treaty declared the coca leaf itself to be a dangerous and addictive drug and obliged countries where coca leaf chewing was practiced to phase it out completely within 25 years[17] after the treaty's enactment. A loophole[18] was included to allow coca imports to the United States as a flavoring in the manufacture Coca-Cola – the only legal use of the leaf. (LAB 1983 p.28, Roncken 2006, Hurtado 2004b, mamacoca.org 2004, Cusack 1986 pp.69-70, Dangl & Howard 2007b, TNI 2008a, Kurtz-Phelan 2006, Laniel 2005, Ledebur 2008 p.2).

In the 1961 convention, state governing bodies were allowed in effect to take "ownership of entire species of naturally-occurring, pharmacologically-active life from the plant and fungal kingdoms and criminalized their consumption outside of narrow, official channels." This move has resulted in the coining of a new term: "biocolonialism: a prior political call of species-wide, genogeographic ownership . . . and bans on non-human nature . . . These bans essentially amount to the legalized theft of nature from the global commons" (Aggarwal 2007).

Such bans "undermine longstanding medicinal, cultural, and religious practices . . . categorically forbidding natural substances and policing populations for compliance" (Aggarwal 2007, Siegel 2004; Weil 1986). The enforcement of these bans has resulted in the emergence of a 'war on drugs' based on an ideology of pharmacologicalism:

> "That matrix of centralized powers and discursive practices whose evolved social function is to reinforce an essentialism of drugs, of angels and demons, and in doing so, to obscure the sociocultural, political, and economic structures that shape both drug understandings and drug effects." In this highly reductionist system drugs have moral attributes that stem not from social and psychological forces but rather from the sphere of molecules. As a result, pharmacologicalism dictates that the moral status of a drug exists as a purely scientific question that can be documented and classified once and for all, not as a societal one that must be considered and reconsidered across time and place. Society, culture, and history can be ignored…" (Aggarwal 2007, DeGrandpre 2006).

Thus, while the coca leaf is central to native Andean sociocultural, political, and economic life, a real war for its extermination began because of the findings of a single brief study. Declared in the 1960's by the government of the United States, it was the 1980's republican governments that put the military in charge of what has come to be known as the "War on Drugs". Democrat Bill Clinton made a decision in November 1993 to officially focus this war on the "source countries" of Bolivia, Colombia, and Peru where coca leaf is grown. Originally called the Andean Regional Initiative this war later came to be known as Plan Colombia (Youngers & Rosin 2005, Hurtado 2004b, Roncken 2006, Gordon 2006, Vidaurre 2001).

The Social Force of Rebellion behind Coca Deprivation

The development of this bellicose strategy to exterminate the coca leaf coincides with cocaine's "second period of popularity in the United States" beginning in the mid 1970's (Cintron 1986 p.43, Gootenberg 2003 pp.34-35). This resurgence in the popularity of the drug[19] in the US, combined with a militarization of the "war on drugs" made natural coca leaf more difficult to acquire for the native Andean chewer. Supplies of coca to traditional markets were restricted or cut off, while at the same time the increased economic value of the leaf[20] soon boosted its price beyond the means of many peasants who consider coca to be one of the most basic of necessities. Indeed, poor peasants are "capable of working without payment if they are invited to have coca" (Sandagorda 1980 p.152). Many traditional chewers found that they could not compete with the strong external demand. "They carryon without coca, of course, compensating with alcohol and cigarettes ... but the cultural balance has been thrown off, and the ritual frame which gives life coherence and meaning is being pulled away from them"[21] (Allen 1988 p.225). In this way, they began to be alienated from their culture and community in a variety of ways that cannot be easily understood by an outsider. The social force of rebellion emerging in reaction to this deprivation[22] has proven to be very strong (Forsberg 1992 pp.82-83). A survey asked 2,712 peasants/workers:

> "The question 'What would people say if their were no coca?' ... it would appear that all consumers, i.e. 90% of the surveyed population, would have some type of negative reaction; approximately half of these would be so disturbed as to rebel against duly constituted authority. This sense of rebellion would apparently affect all ecological regions. People living in the tropics would oppose the move just as much and would be touched as much or more as peasants/workers from the valleys and the Altiplano (highlands)" (Carter et al. 1980a p.163).

In addition to the cultural, medicinal, and nutritional deprivation to traditional users of the leaf, it must be recognized that many coca growing communities have also felt the profound economic loss of their livelihood as eradication of the leaf became a key strategy in the 1990's.

Intended to soften the blow of these economic losses, the US supported alternative development programs in the 80´s and 90´s which sought to replace coca with other crops such as bananas, hearts of palm, pineapples, oranges, plantains

and rice. While it initially looked promising on paper, alternative development turned out to be a boondoggle for most coca farmers for a variety of reasons. In the Bolivian coca growing region of the Chapare, these programs were explicitly linked to coca eradication as farmers were required to eliminate their entire coca crop to participate- "at great risk and repeated failure" (Williams 2008). This strategy left poor peasant farmers without any income while waiting for their alternative crops to produce a profit. For example, citrus and coffee take years to mature before the first harvest can be sold at market (Forsberg 1992 pp.87-90).

Alternative development models also followed the western model of agricultural development which encourages uniform monocultures. By cultivating just one crop, peasant families essentially put all their eggs in one basket making them very vulnerable to complete crop failure. Many of the licit crops that were introduced also require special care and expensive imported inputs such as agrochemicals to succeed. Depressed prices for many alternative crops, delays in extension services and marketing assistance, as well as a lack of technical support made making a decent livelihood from licit crops unobtainable. Combine this with the challenge of getting perishable fruits[23] and vegetables out to domestic markets on unstable mountainous roads explains why these programs largely failed. The option of getting them to a distant ocean port for export ran up against the geographical realities of being between a rock (the second highest mountain range in the world to the west) and a hard place (vast rainforests and river rapids to the east). "For many farmers in the Chapare, the alternative to growing coca is unemployment and hunger" (Dangl 2007a pp.41 & 48, Veillette 2005 p.9, Vidaurre 2001, Report on the Americas 1989 pp27-29; Healy 1988 pp. 111-115; Nash 1992 p.A4, Sanabria 1986 p.91; Gill 1987a p.385; Eastwood, D.A. & Pollard, H.J. 1986, Forsberg 1992 pp.87-90).

Coca cultivation turns out to be ideal for remote settlement areas such as the Chapare. It is light weight, high in value, can be stored for months, and has a high market demand (Eastwood and Pollard 1986 pp.260-261). For the Chapare, Coca is truly a "wonder crop" that can't be beat:

> In the Chapare it grows relatively well on poor soils, has few problems with blight and pests, yields four to five harvests annually and offers a much higher and more stable economic rate of return from land and labor investments compared to any other Bolivian cash crop in the highlands or lowlands. With a life expectancy of 18 years, the plant's lightweight leaves and nonperishable quality keep transport costs low" (Healy 1986 p.127, see also Henman & Metaal 2009).

The investment of millions of U.S. dollars in alternative development programs in Bolivia thus largely failed in providing viable substitutes[24] for the coca economy (Conzelman 2007). Therefore, despite great adversity – an international ban, stiff competition, and the declaration of war - the traditional users of coca continue to resist attempts to faze out their use of the sacred leaf, and coca growers (cocaleros) their right to make a viable living.

In the face of such resistance and failure, the U.S. War on Drugs began an all out assault on the Chapare. From 1998-2004, this new policy of "zero coca" had the stated goal of halting production of coca entirely through a combination of militarization of the region, forceful eradication of coca crops, and widespread arrests and human rights violations aimed at terrorizing coca farmers[25] (Navarrete-Frías 2005 pp.10-12, Dangl 2007a p.40, Achtenberg 2007, Vidaurre 2001).

While this policy was initially successful in eliminating much of the coca production in the Chapare, on the political front it had the unintended effect of mobilizing cocaleros and forging them "into one of the most combative social movements of the country." They came to form a powerful political party with links to other social movements, national worker and campesino organizations (Dangl 2007a p.40 & 49, Achtenberg 2007, Healy 1991 pp.89 & 92, Healy 1988 p.112).

At the head of this powerful resistance movement is the political party MAS (Movement towards socialism) which emerged out of necessity and indignation towards this most violent turn in the War on Drugs. After several years of civil unrest and presidential ousters, its leader – Evo Morales – became the first indigenous president in what was an unprecedented landslide victory in the 2005 elections (Dangl 2007a p.48).

A Different Approach to Coca Production – Turning Over a New Leaf

Evo Morales has taken a very different approach to managing the coca leaf in Bolivia. At the 2006 U.N. General Assembly, he held one up and said that "This leaf represents... the hope of our people" (Morales 2006). Rather than demonizing the coca leaf along with the drug cocaine, his administration has adopted a non-violent policy of "coca, sí; cocaine no" which aims to collaborate with coca farmers by rationalizing and commercializing coca as a legitimate crop[26]. Bolivia's new proposed Constitutional text goes even further by officially bestowing coca the status of a

valuable natural resource. (Hertzler 2010, Friedman-Rudovsky 2008, Williams 2008, TNI 2006, TNI 2008a, TNI 2011, Keane 2007a, Achtenberg 2007, Dangl & Howard 2007, Gordon 2006, Conzelman 2007, BBC News 2007, Schultz 2008).

The "coca, sí" part of the plan intends for coca farmers to sell directly to traditional consumers as well as nascent industries already producing some 30 coca leaf-derived products such as tea[27], baking flour, bread, pasta, candy, liquor, soap, shampoo, toothpaste, nutrition bars, diet pills[28], ointments , arthritis medication, and other medical items for the domestic market. A longer-term strategy aims to re-establish the global coca trade that flourished in the late 19th and early 20th centuries and to generate a second boom in exports of coca-derived products. Such a strategy is based on the fact that these legitimate uses of coca will draw some of the country's production away from the drug trade[29] and thus achieve the stated goals of the drug war without the violence and oppression of forced eradication. (Ledebur 2008 p.1, Langman 2006a & b, Esch 2007, Keane 2007a, Achtenberg 2007, Dangl & Howard 2007, Conzelman 2007, BBC News 2007, Williams 2008, Schultz 2008, Friedman-Rudovsky 2008, Almudevar 2007, Kurtz-Phelan 2006, Luxner 1994).

This long-term strategy to export coca-derived products is currently impossible under the international law enshrined in the 1961 Single Convention on Narcotics in which the natural coca leaf is considered to be a "narcotic drug" alongside heroin and cocaine. Most scholars who have studied coca assert that this classification was a truly absurd and "extremely embarrassing mistake" and that the leaf should be removed from the list of controlled substances and legalized because it never belonged there in the first place. (Metaal 2011, Schultz 2008, Davis in Goodman 2008, TNI 2003a, TNI 2008a, TNI 2011, Drug War Chronicle 2007, Goodman 2008).

A re-appraisal of the coca leaf is in order and the seriously flawed ECOSOC study that is the basis of this misclassification must be refuted by recognizing more recent research and conducting new studies. The methodology of such studies needs to strike a balance between sound ethical scientific methods and more holistic social & cultural sensitivity while also taking into account all the historical and contemporary realities of the coca leaf. According to Silvia Rivera, this process is already under way in Bolivia as "Many people have begun to rediscover its nutritional and medicinal benefits" (TNI 2003b, Friedman-Rudovsky 2008).

Suppression of Scientific Research on the Benefits and Uses of the Coca Leaf

One of the greatest obstacles to understanding the legitimate uses and many benefits of the coca leaf has been the highly reductionist and pharmacological approach to its study. "Since the turn of the century, the importance of coca leaf as a medicine has been largely ignored by Western scientists, who identified coca leaf with cocaine and preferred to experiment with the pure, isolated compound. As a result, coca leaves completely disappeared as a pharmaceutical product and no longer were available for investigation in the United States and Europe" (Plowman 1986 p.8).

The World Health Organization (WHO) in collaboration with the United Nations Interregional Crime and Justice Research Institute (UNICRI) carried out a much more holistic research project between 1991 and 1995 which to date is the most comprehensive study of both the coca leaf and the drug cocaine ever conducted. An impressive collaboration of 45 international researchers including professors from five American universities collected data from 22 cities in 19 countries on five continents. Their focus was on the use of coca and its derivatives, on the effects on consumers and their communities, and on the response of governments to the problems associated with the drug cocaine. This ambitious study was to be the most promising piece of scholarship designed to shed new light and reinforce recent research on coca. Leaked excerpts from the study "underscored that the traditional use of coca appears to have no negative health effects and that it serves positive therapeutic, sacred, and social functions" and show that its "most important recommendation holds that: WHO/Program on Substance Abuse (PSA) should investigate the therapeutic benefits of coca leaf and whether these effects could be transferred from traditional contexts to other countries and cultures." The problem is its earthshaking findings were never allowed to be officially released. (TNI 2003A, TNI 2006 pp.7-8, Argandoña 2006, Ledebur 2008 pp.2-3).

Even before the study got off the ground, the WHO in 1992 began to back-pedal by stating that coca leaf chewing was a form of "addiction" (based on the 1950 ECOSOC study) and the organization hasn't officially evaluated the practice ever since. Just as the new study was to be released in 1995, the US representative, Mr. Boyer expressed his government's concern with the results of the study: "which seem to make a case for the positive uses of cocaine, claiming that use of the coca leaf did not lead to noticeable damage to mental or physical health, that the positive health effects of coca leaf chewing might be transferable from traditional settings to other countries and cultures and that coca production provides financial benefits to peasants" (WHO 1995 in Argandoña 2006, TNI 2003b). He added that the US government would suspend financial contributions to the WHO if the organization did not dissociate itself

from the conclusions of the study or if it took a position that justified coca production. The two sides argued about the importance and objectivity of the study and concluded that it would have to go through a rigorous peer review process with “genuine experts” before the findings could be released. To date, it has been neither reviewed nor published because the US National Institute of Drug Abuse (NIDA) in charge of selecting the “experts” who were to review the study rejected every single one proposed by the WHO. The TNI (2003b) concluded that “the prevalence of political interests over scientific evidence demonstrated here is very worrisome” (Henman & Metaal 2009, Argandoña 2006, TNI 2003a & 2003b, TNI 2006 pp.7-8, Ledebur 2008 pp.2-3, ECOSOC 1950).

Contemporary Non-traditional Uses of the Leaf
Sharing its benefits with Modern Society

Despite thousands of years of beneficial and constructive use of coca in the Andes and Amazonia, the authors of the 1961 Single Convention on Narcotics (Article 49, 2e) had the audacity to prohibit the chewing of coca leaf and to suggest that this could be phased out within 25 years of the convention’s implementation in 1964. Portrayed as the backward practice of primitive peoples, others have claimed that the traditional chewing of coca has been declining for decades and that its use would eventually fade away. But according to a survey of coca consumption, "the youngest age group surveyed appears to be consuming almost as much coca as the average for the entire sample population" (Carter et al. 1980a p.162, La Razón 2008, TNI 2003b). Clearly, the constructive uses of coca leaf in its natural state are not going away, and later agreements have reflected this reality.

In 1988, on the eve of the deadline to phase out all uses of natural coca leaves, two new agreements seemed to soften the prohibition on “traditional” coca use. The United Nations Convention against Illicit Drug Trafficking and Psychoactive Substances, 1988, article 14, par. 2 stipulates that “the measures adopted should respect fundamental human rights and will duly take into account traditional licit uses, where historical evidence exists. . .” (TNI 2003b, Friedman-Rudovsky 2008). Bolivia also implemented the U.S.-backed antinarcotics Law 1008, which recognizes the traditional uses of the leaf (chewing, tea, and medicines) and allows some peasant farmers to grow small amounts for personal consumption and small-scale trade, limiting total legal production in the country to 12,000 hectares – an area that many contend is not enough to meet legitimate demand. One of the primary arguments for the expansion of coca production in the country today is that the “legal market for the leaf is larger than Law 1008 recognizes, as it was based on data from the 1970s that no longer reflect Bolivia’s current demographics[30] and consumption patterns . . . and potential for legal exports” (Conzelman 2007, Navarrete-Frías 2005 p.13).

For a long time Evo Morales has requested that a new study of current non-narcotic coca consumption patterns in Bolivia and surrounding countries be carried out. The European Union donated 1 million Euros for a “Comprehensive Study on the Legal Demand of the Coca Leaf in Bolivia” which began in early 2008 [31](European Commission 2009a & 2009b). The main issue with such a study are the methodology and assumptions about legitimate uses of the leaf. The stereotypical use of the leaf is by indigenous people of the rural altiplano and Amazon basin. However legitimate use of the coca leaf in its natural state has spread far beyond this stereotype and a study limited to merely “traditional” uses of coca would be as absurd as limiting a study of tobacco leaf to its use by North American Indians in peace pipes.

One of the conclusions of the never released WHO study is that the constructive use of natural coca leaves is transferable to non-traditional countries and cultures (WHO 1995 in Argandoña 2006, TNI 2003b, Ledebur 2008 p.2, TNI 2008b). While chewing coca has long been looked down upon by some as a "dirty habit" of the Indians, it is becoming clear that coca leaves have become very popular far beyond just the indigenous people in the rural Andes and Amazon. More recent studies have shown that coca consumption has in fact spread to new regions and “non-traditional” social groups. Eastern lowland departments and urban areas in Bolivia such as Santa Cruz and Tarija have now become the number one consumers of coca leaves in the country. It is common to see members of non-indigenous groups such as the Mennonites chewing coca (El Deber 2007). While many urbanites may not share the same spiritual and reverence and respect afforded the leaf by most rural indigenous social groups, chewing coca is nevertheless quite common throughout Bolivian society. As for the growth in coca leaf-derived products, “it is not coming from Indians or laborers, the traditional consumers of coca; it is coming from upper-middle- and upper-class city dwellers: "They want 'all natural,' and they'll pay for it" (Kurtz-Phelan 2006). Coca chewing is also quite prevalent in neighboring countries of Peru, Colombia, and northern Chile. In northern Argentina, Bolivian coca has actually become a status symbol amongst middle and upper classes. Lighted signs advertising Bolivian coca abound in the area and conservative estimates put the annual market for Argentine coca leaf consumption at 1200 tons/$USD50 million (Rivera 2001 & 2003).

INCB and the Frontal Assault on Coca

Ever since the Morales administration began its strategy to decriminalize and industrialize the leaf, they have been on a collision course with the International Narcotics Control Board (INCB), the UN agency charged with enforcing the 1961 convention amongst other narcotics treaties (Drug War Chronicle 2007).

A year and a half after Morales held up a coca leaf at the 2006 U.N. General Assembly, the INCB released a report which called on Bolivia and Peru to criminalize the chewing of coca leaves and urged their governments "to establish as a 'criminal offense' the industrialization of the leaf to make tea, baking flour, and/or any other product." The March 2008 report, echoing Fonda's obsolete findings in the 1950 ECOSOC study, says the consumption of natural coca leaf plays a role "in the progression of drug dependence." Silvia Rivera characterized the report as "the most aggressive attack [Bolivians] have faced" since the U.N. designated coca a drug in 1961" (Friedman-Rudovsky 2008, Goodman 2008, La Razón 2008, Coca y Soberanía 2008, Ledebur 2008 p.2).

This report coincided with what appears to be a major shift in US policy which in the past had recognized the legitimate traditional use of coca leaves. The US issued statements in support of the 2008 INCB report fully backing its call to abolish coca chewing or the making of coca derived products such as tea thus parroting the tired old assertion that coca leaf is a narcotic drug (Ledebur 2008 pp.1&4).

These frontal assaults on age old traditions and future economic development projects caused outrage in the Andes and around the world. "Critics of the report call that conclusion an absurd stretch, especially since there is no published evidence that the coca leaf itself is toxic or addictive" (Drug War Chronicle 2007, Friedman-Rudovsky 2008, Schultz 2008, Democracy Center 2008, La Razón 2008).

Other critiques of the 2008 INCB report point out that by attacking the key feature of Andean-Amazonian culture, it is a racist position that violates basic human rights, and contradicts the UN's own 2007 Declaration on Indigenous Rights, the 1988 United Nations Convention against Illicit Drug Trafficking and Psychoactive Substances which "takes into account traditional licit uses [of coca], where historical evidence exists." The 2008 INCB report even contradicts itself in the part which calls for the "respect for national sovereignty, for the various constitutional and other fundamental principles of domestic law – practice, judgments and procedures –and for the rich diversity of peoples, cultures, customs and values." If adopted by the UN, the report would in effect criminalize entire peoples and result in the prosecution of millions "for a popular tradition and custom that has no harm and is even beneficial" (Pien Metaal in TNI 2008a, Goodman 2008, Ledebur 2008 p.3, United Nations 2007).

While some may not take the INCB's proposed ban seriously, precedents have already been set by the governments of Colombia and Peru who, in 2007, both moved to prohibit coca derived products. Once actively promoted by the government of Colombia, coca products made by impoverished Indians were banned in February of 2007. The reversal came in the face of complaints that a drink they were manufacturing called "Coca Sek" was infringing on a certain global trademark. While the Colombian trademark office backed the Nasa Indians who make it, then President Uribe imposed the ban. The Peruvian government's National Fund for State Enterprise Activity (FONAFE) similarly informed the National Coca Company (ENACO) that it must abide by the 1961 Convention stipulation in article 27 that "ENACO can produce and commercialize products derived from the coca leaf solely for medical or scientific purposes; or faulting that, coca products that do not contain any type of alkaloid" (indymedia.org 2007). This effectively guts the nascent coca product industry because the "separation of the cocaine alkaloid from the leaf, producing a substance that is used to flavor the drink [Coca-Cola] without the alkaloid, is one of the best-kept industrial secrets in the history of the world" (TNI 2006, Indymedia.org 2007, De Leon 2007).

It appears that the 2008 INCB report is a knee jerk reaction to Bolivia's plans for industrialization of the leaf and its definition of coca as a valuable natural resource written into the text of the new constitution. Rather than base its decision on the plentiful scientific evidence that has been generated since the racist and unscientific ECOSOC study, the INCB has simply acted out "of simple bureaucratic consistency. If the coca leaf is on the international narcotics list, the panel argued, then governments ought to prosecute any use of it in any form" (Schultz 2008, TNI 2008a).

Silvia Rivera points out the irony of the INCB's radical position. "With its opposition to the coca leaf, the INCB merely foments the drug traffic . . . Every leaf that goes to good, healthy uses is a leaf that doesn't go to the traffickers . . . That's the best way to fight against the drug traffickers. Those bureaucrats at the UN simply do not understand; they think coca is a drug" (Drug War Chronicle 2007, Kurtz-Phelan 2006). Apparently the Europeans agree because in 2008 the European Parliament approved a report that calls "on the [European] Commission and on the Member States to explore ways of cooperating with EU-civil society organizations involved in promoting substances derived from coca leaves for lawful use purely as a means of contributing effectively (by absorbing raw materials) to international

action against drugs trafficking, ensuring at the same time the safe use of such substances" (TNI 2008b, Ledebur 2008 p.4).

Coca as an intangible heritage of humanity
Freeing coca from the shackles of international law

While repealing the ban on the chewing of coca in its natural form would correct "an embarrassing mistake committed by the world community 50 years ago" and go a long ways towards upholding the rights of indigenous peoples and others to use the leaf in constructive ways, the full legalization and industrialization of coca could, ironically, pose a dilemma. Silvia Rivera (2007) expresses concern that while removing the plant from the list of narcotics may help generate a second boom in coca leaf-derived products, it will not protect and preserve the traditional cultural and social qualities of coca amongst native Andean and Amazonian peoples, nor is it guaranteed that Andean countries would benefit from such a boom. Legalization of the leaf may indeed result in the Andes losing its current comparative advantage as the only source of coca. There is already precedent for this concern. In the early 20th century, the island of Java in the Dutch Colony of Indonesia was the largest producer of coca in the world – much of it going to China with enough left over to displace most Andean coca from the European market (Metaal 2011, Henman & Metaal, P. 2009, Gootenberg 2003 p.20).

The current monopoly over coca leaf products enjoyed by the trademark Coca-Cola could simply be extended to new products where the holistic goodness of the leaf is destroyed in manufacturing processes that seek to isolate, refine, and extract certain essences while disposing of the rest or using it as a flavoring agent. Dr. Rivera believes that Andeans are the best suited to disseminate coca to the rest of the world and one of the best ways to ensure their continued role in this process is to declare coca and its central place in Andean culture as an intangible heritage of humanity through UNESCO. This would also help support respect for indigenous rights more generally (Rivera 2007, Ledebur 2008 p.1).

There are several advantages to this strategy. Formal recognition of the cultural value of the coca leaf would include aspects of both modern scientific knowledge and ancestral wisdom – a combination that is especially suited to the competence and drive of UNESCO. By making this the first step in an international campaign for the re-evaluation of coca, it would avoid direct confrontation with competing political forces, deepen successes already achieved, simultaneously open new fronts in the fight within the multilateral space of the UN system, and lay the groundwork to move forward on the goal of removing the coca leaf from the 1961 Single Convention's list. This final step would require that a national government follow through with the formal procedure to remove the coca leaf from the 1961 Single Convention starting with an official request to the Secretary General of the United Nations (Comité Coca 2007, TNI 2006 pp.14-15, Ledebur 2008 p.3).

In response to the 2008 INCB report, the Bolivian government announced that it would follow through with this process. The Bolivian delegation to the March 2008 meeting of the UN Commission on Narcotic Drugs (CND) issued an "energetic protest" against the INCB's recommendations, expressed offense at such a blatant attack on Bolivia and its indigenous communities, and said that it would request that the natural coca leaf be legalized by removing it from the 1961 Convention's list of narcotics (Friedman-Rudovsky 2008, Ledebur 2008 pp.1, 3, 4).

In June of 2009 Evo Morales decided to make his point by chewing a coca leaf at the UN High Level session on drugs in Vienna while saying "If it's a drug, then you should throw me in jail . . . He called for their removal from the 1961 Single Convention on Narcotic Drugs, while asking that coca paste be added to the list instead." Evo's official written request to the Secretary General of the United Nations was a much more limited and very reasonable proposal that the 1961 Single Convention on Narcotic Drugs be simply amended by deleting the two paragraphs which stipulate that "coca leaf chewing must be abolished within twenty-five years." The ECOSOC (UN Social and Economic Council) decided unanimously to pass the amendment proposal on to the Parties of the Convention for their consideration in the next 18 months (by January 31, 2011). Without any objections, the amendment would automatically enter into force (Metaal 2011, Youngers 2011, WOLA/TNI 2011, Economist 2011a & 2011b, TNI 2009 & 2010, Morales 2009, Government of Bolivia 2011, IDPC 2011, Hausfather 2009).

In the last days before this deadline, the United States formed a "friends of the convention" group and announced it would object to the simple decriminalization of coca chewing[32] along with the Russian Federation, Japan, France, the UK, Germany, Italy, Sweden and Denmark. In a last ditch effort, Evo Morales kicked off his own international campaign to seek the support of governments and international organizations for his amendment to legalize coca leaf chewing. His government´s request will be discussed January 21st at the UN general meeting in Geneva (Metaal

2011, Youngers 2011, IDPC 2011, Jelsma 2009, Insidecostarica 2011, Government of Bolivia 2011, BBC News 2011, BIF 2011, Economist 2011a & 2011b, Bajak 2011, WOLA/TNI 2011).

Significant cracks are indeed appearing in the worldwide ban on coca. For example, in 2008 both Italy and Peru joined Bolivia in defending coca at the CND meeting. All of the presidents in South American gave their support to Bolivia's proposal in the Presidential Declaration of Quito signed in August 2009 and which asks the international community "to respect the ancestral cultural manifestation of coca leaf chewing." Cuban scientists have been conducting a detailed study of coca's medicinal and nutritive properties with an eye towards developing alternative medicines and food products with the sacred leaf. Such industrialization could provide an incentive for the production of healthier organic coca in what Silvia Rivera refers to as "ethical production". In perhaps one of the most hopeful moves, the European Parliament voted overwhelmingly (600 to 35) to promote the legal use of substances derived from coca as a way of fighting drug trafficking thus paving the way for their sale and a change in laws prohibiting their commerce. The Chinese government has also suggested its openness to such changes. Member States of the Latin American Parliament and the Andean Community announced themselves to be in favor of the legalization of the coca leaf and its industrialization as a key element allowing the economic development of Bolivia. (Youngers 2011, WOLA/TNI 2011, BIF 2011, Comunidad Andina 2009, Keane 2007b, Kurtz-Phelan 2006, Bolpress 2007, Rivera 2007, Martin 2008, Ledebur 2008 pp.3-4, Rivera 2007).

On a more local level in Bolivia, there are efforts such as the group Coca y Soberanía (Coca and Sovereignty) in La Paz which works for a re-evaluation of coca, promoting its constructive uses by organizing local coca fairs and supporting research. This group is also struggling to form a wider regional and international front with a platform founded on the legalization of coca to vindicate its cultural and economic value and recognize its central importance to a sovereign policy of development. This strategy is seen to be the most effective means to destroy the illegal economy, and simultaneously resist the unjust impositions of the United States that limit the free trade of products from the developing world. The Coca Museum and the International Coca Research Institute (ICORI) in La Paz work to promote research and disseminate information about the science, history, and news updates about coca leaf and the drug cocaine. Through education and changing public opinion, it is hoped that some day this sacred and valuable resource will be freed from the fetters of an unjust international law (TNI 2003, Luxner 1994, Coca y Soberanía 2005, Friedman-Rudovsky 2008).

Conclusion

The overwhelming scientific evidence accumulated in the past 50 years should be enough to allow the international community to correct the historical mistake[33] that was made when coca was included on the list of drugs banned by the 1961 Single Convention and coca chewing was slated to be abolished. But there is the danger in the tendency of a reductionist scientific viewpoint to diminish the significance of this complex wonder to merely a chemical compound, a highly nutritious food supplement, or versatile medicine. Equally troubling is the profit-making tendency to want to "add value" by treating this sacred leaf as a raw material to be refined in order to extract a flavoring agent or isolate its notorious alkaloid without recognizing the natural coca leaf's holistic goodness as well as its sacred and social qualities as an intangible heritage of humanity offered by Andean-Amazonian cultures. The prophetic "Legend of the Coca Leaf" presages us of the difference between the way the leaf is used traditionally in the Andes, and the corrupted form used by Western conquerors. As the Sun God said to the Andean wise man Kjana Chuyma: "[coca] for you shall be strength and life, for your masters it shall be a loathsome and degenerating vice; while for you, natives, it will be an almost spiritual food, for them it shall cause idiocy and madness" (Villamil 1929, Hurtado 2004a).

People everywhere need to learn to respect the beneficial and mystical qualities of coca leaf in its natural state and recognize the idiocy and madness behind its prohibition in international law. To do so will require a serious re-evaluation and education campaign to overcome cultural barriers and long held stereotypes. The Bolivian and other Andean governments should discard the INCB directive to "formulate and implement education programs aimed at eliminating coca leaf chewing, as well as other non-medicinal uses of coca leaf" and rather take the time to "educate others about the coca leaf and the need to correct this historical mistake" because, as Virginia Aillón, first secretary to the Bolivian Embassy in Washington states: "Coca is not cocaine. Coca is medicine, food, coca is fundamentally cultural" (Armental 2008, Ledebur 2008 pp.2 & 5).

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[1] The debate about the public health threat posed by recreational cocaine use or abuse is beyond the scope of this study. However, the drug cocaine has long been constructively used as a local anesthetic and is superior to synthetic substitutes such as procaine because it has twice the anesthetic power as well as hemostatic properties which prevent bleeding (http://cocamuseum.com/galeria/26.htm)

[2] "The tradition inherited by the [peasants] of Bolivia has taught them to use coca alkaloids constructively. The [producers and consumers of cocaine] now threaten to take this also away from the native, and only because ... [they have] misdirected the forms and purposes for which the plant has long been used" (Carteret al. 1980a p.164).

[3] "The author Duke James performed a nutritional study about the coca leaf in the Chapare region of Bolivia, comparing it with 50 vegetal products of Latin America. He found that coca leaves have a greater content of calories, proteins, carbohydrates, fibers, calcium, phosphorus, iron, vitamin A and Riboflavin (Duke 1975). The ingestion of 100 grams of Bolivian coca should be more than sufficient to satisfy the dietetic ratio recommended, in calcium, iron, phosphorus, vitamin A, vitamin B, and vitamin E." (James in Domic 1980 p.171) according to a study published by Harvard University in 1975 (Duke, J., D. Aulik and T. Plowman, Nutritional Value of Coca).
"An important group of constituents in coca –nutrients- has been largely overlooked or ignored. During the 1970's, a number of studies demonstrated that coca leaves contain impressive amounts of vitamins and minerals. (Machado 1972, Duke 1975, Carter 1980). In one study (Duke et al. 1975) the amounts of 15 nutrients in Bolivian coca leaves were compared to averages of these nutrients present in 50 Latin American foods. Coca was found to be higher in calories, protein, carbohydrates, fiber, calcium, phosphorus, iron, vitamin A and riboflavin. Based on these data, 100 grams of Bolivian coca would more than satisfy the Recommended Dietary Allowance for reference man and woman in calcium, iron, phosphorus, vitamin A and riboflavin. These data contradict earlier claims like those of Buck (1968) that coca chewing results in malnutrition (Plowman1986 pp.6-7).

Thanks to the calcium, proteins, vitamins A and E, and other nutrients it contains, the plant offers even better possibilities to the field of human nutrition than it does to that of medicine, where it is commonly used today (Mittrany with Pien Metaal 2007).

vitamins A, B1, C and E, thiamin, niacin and roboflavin, make coca a plant with the highest quantity in the world of NON PROTEINIC NITROGEN, which eliminates toxins and pathologies of the human body and gives solubility and hydration properties. (cocamama.com)

[4] A very important study done by the Harvard University (Duke et al 1975) found that the coca leaf has a larger amount of nutrients than 30 other fruits, vegetables and cereals considered highly nutritious. See:
http://www.cocamama.com/AllbrAbout/TheCocaleaf/AWordAbouttheCocaLeaf/tabid/128/Default.aspx
http://www.cocamuseum.com/htm/nutritional.htm
(Hurtado 1995) ch.2

Nutritional value of coca leaves 100 grams:
Proteine 19,9 gr. . Vitamine alfaβ caroteen 16,6 mg.

Phosphoros 405 mg B1. 0,8 mg.
Potassium 1110 mg. B3 1,7 mg.
Calcium 2191 mg. B6 8,6 mg.
Magnesium 911 mg. C 2 mg.
Iron 36 mg. E 53 mg.
Zinc 4 mg. H 0,5 mg.
Boron 24 mg.
Nicotin acid 5,0 mg
(cocagrowers.org 2005)

[5] List of alkaloids contained in the coca leaf and their qualities:

Cocaine- Stimulating, euphoric, painkiller
Ecgonine- Gives stamina and regulates the burning of carbon;hydrates and increases fatt burning
Quinoline- Prevents from cavities and strengthens the gum
Globuline- Stimulates blood circulation, [fights] altitude sickness and low blood pressure
Papaine- Promotes digestion, good for skin
Pectine- Anti diarhhea, absorption of poison
Reserpine- Fights high blood pressure
Benzoine- Anti ferment, good for skin, mouth, colon,
Atropine- Dry's up salival glands, relaxes muscle tonus
Hygrine- Stimulates salival gland
Pyridine- Stimulates blood circulation, improves oxygen cirulation of brain/muscles
Conine- Local anaesthetics
Inuline- Improves the production of hemoglobine
Cocamine- Analgesic/painkiller, blocks only pain; other sensations remain intact.
(cocagrowers.org 2005)

[6] "A wad of coca leaves mixed with an alkali to facilitate extraction of the juice is placed between the cheek and the teeth and then moved around slowly in that position until all the juice is gone, after which it is spat out. Laboratory studies carried out some 15 years ago showed that coca leaf is rich in vitamins, mineral salts and vegetable proteins and that only a tiny quantity of alkaloids passes into the blood" (Duke in Labrousse 1990 p.335)

[7] "Whether in the high Andean *Altiplano* (high plateau region) or in the Amazonian lowlands, the principal use of coca is for work (Burchard 1975; Carter et al. 1980b; Plowman 1981, 1984a). Workers will take several breaks during the daily work schedule to rest and chew coca, not unlike the coffee break of Western society. Coca chewers maintain that coca gives them more vigor and strength and assuages feelings of hunger, thirst, cold and fatigue. Coca is chewed by rural people in all kinds of professions that require physical work, especially by farmers, herders and miners in the highlands and by farmers, fishermen and hunters in the lowlands. Coca is especially highly regarded for making long journeys on foot whether in the high Andes or Amazonian forests" (Plowman 1986 p.8; Plowman 1981; Mortimer 1901; Martin 1970).
"If you can't sleep because of indigestion or bad circulation or anxiety, drink a cup of coca tea and you will sleep," she advised. "But if you have to do hard work or study, chew 20 or 25 coca leaves and you will work all night" (Kurtz-Phelan 2006).

[8] Roger Carvajal, Bolivia's vice-minister of Science and Technology, says coca has been found to ease stress and aid circulation and breathing (Langman 2006).
Probably the most important medicinal use of coca is for disorders of the gastrointestinal tract. It is the remedy of choice for dysentery, stomach-aches, indigestion, cramps, diarrhea, stomach ulcers and other painful conditions (Plowman 1986 p.8, Martin 1970; Fabrega and Manning 1972; Hulshof 1978; Carter et al. 1980, 1981; Weil 1981; Grinspoon and Bakalar 1981).
"Coca is also the most important remedy for treating symptoms of altitude sickness or *soroche,* which include nausea, dizziness, cramps and severe headaches. Coca is also commonly used for toothaches, rheumatism, hangovers and numerous other ailments, taken either internally or applied as a plaster or poultice" (Plowman 1986 p.8).
"Recently, coca is being restudied for possible applications in modern medicine. Weil (1981) has recommended that coca be studied for several therapeutic applications, including: (1) for painful and spasmodic conditions of the entire gastrointestinal tract; (2) as a substitute stimulant for coffee in persons who suffer gastrointestinal problems from its use or who are overly dependent on caffeine; (3) as a fast-acting antidepressant and mood elevator without toxic side effects; (4) as a treatment for acute motion sickness; (5) as an adjunctive therapy in programs of weight reduction and physical fitness; (6) as a symptomatic treatment of toothache and sores in the mouth; (7) as a substitute stimulant to wean addicted users of amphetamines and cocaine which are more dangerous and have higher abuse potential; and (8) as a tonic and normalizer of body functions" (Weil 1981 in Plowman 1986 p.9).
"I think so many people would be rid of osteoporosis and calcium deficits and gastric disorders and obesity and cardio-vascular problems and diabetes [if coca were available]" (Silvia Rivera in Knoll 2007)

[9] [Evo Morales] defended this sacred leaf until its meaning was restored as a symbol of the dignity and sovereignty of the people of Bolivia" (Quispe 2007)

[10] Alison Spedding describes the coca leaf as a "total social fact: . . . Coca leaf, when chewed, has the ability to protect one from all

kinds of malignant spiritual influences, from the witchcraft of one's neighbors, from the mountain spirits who may attack sleeping travelers, from the kharisiri who extracts from living victims the fat that in Andean thought represents their life force. …It represents a positive channel between the chewer and protective ancestral forces and forms part of almost all offerings in Andean religion" (Spedding in Léons et al. 1997 p.68).

[11] The Ayllu is the basic unit of Andean social organization and is a "uniquely Andean 'social, ritual, and political formation" (Allen 1986 p.41, Orta 2001 p.198).

[12] Principal benefits of traditional coca leaf use are for the health human - physical, mental and social- as well as ecological wellbeing, since it is:

- a mild stimulant that improves the productivity of both manual and intellectual work;
- an effective medicine for cultural ailments and everyday health problems such as headaches, stomach pain, and rheumatism;
- the best remedy for problems of mental health like exhaustion, disappointment, depression, distress, and stress;
- a source of micronutrients and vitamins;
- a universal social lubricant, and facilitator of solidarity in Andean communities;
- the principal religious tool used in spiritual transcendence;
- and is key to an ecological connection with the nature, so loved and respected in Andean cosmology

(Argandoña 2006)

[13] "The politics of coca's inclusion [in drug conventions] are still murky and seemingly aped the logic and language of opiates (coca plant was to cocaine as poppy to morphine)" (Gootenberg 2003 p.18). The demonization of the coca leaf began in 1913 with Peruvian psychiatrist Dr. Hermilio Valdizán, who diagnosed coca as a cause of the Indians abject mental "alienation" and cultural "degeneration" (Gootenberg 2003 pp.24-25, Valdizán in Gagliano 1994 ch.6). "It was all about over generalization and abusive extrapolations from a situation to another one, from the US and Europe to the Andes; from one vegetal substance to another one, from opium to cocaine; from one effect to another one, of the sedative effect produced by narcotics to the stimulation produced by cocaine; from one use to another, from the custom and the habit of akullico to an addiction, and drug abuse; from smoking opium to chewing coca; from the drug that produces cocaine addiction, to the leaf that produces coca addiction" (Argandoña 2008 p.3).

[14] The stated goal of the study from the start was to "investigate the effects of chewing the coca leaf and the possibilities of limiting its production and controlling its distribution" (TNI 2006 p.5). "On arriving in Lima in September 1949, the head of the Commission Howard B. Fonda gave an interview before beginning his work, in which he said: 'We believe that the daily, inveterate use of coca leaves by chewing ... not only is thoroughly noxious and therefore detrimental, but also is the cause of racial degeneration in many centers of population, and of the decadence that visibly shows in numerous Indians - and even in some mestizos - in certain zones of Peru and Bolivia. Our studies will confirm the certainty of our assertions and we hope we can present a rational plan of action ... to attain the absolute and sure abolition of this pernicious habit.' The conclusions of the Commission were already reached before the enquiry even began" (Metaal 2011).

[15] "In 1567 one of the leading spokesmen for the "coca lobby," Juan de Matienzo, informed the King of Spain that: "to try to eradicate coca is to want Peru to cease to exist, that the land be depopulated ... and cause [the Indians] to stop working .., it is finally, the imagination of men, who for their own interests and believing that they are accomplishing something, destroy the land without understanding it" (Spedding 1989 p.4).

[16] According to Martin Jelsma, coordinator of the TNI drugs programme:
"The inclusion of the coca leaf in Schedule I of narcotic drugs of the 1961 Convention was based on an ECOSOC study done back in 1950, inspired by colonial and racist sentiments rather than science. [8] It is time the [INCB] Board asks the Commission on Narcotic Drugs and the World Health Organisation for guidance on this matter instead of casting its own narrow-minded judgment and retreating to the obsolete thinking of the 1961 Convention" (TNI 2008a).

[17] For original signatories, the deadline was December 12, 1989. "Bolivia deposited its instrument of ratification of the Single Convention on Narcotic Drugs of 1961 on 23 September 1976. Consequently, the Convention entered into force in Bolivia on 23 October 1976, and the period of 25 years referred to in article 49, paragraph 2 (e), elapsed in 2001" (Morales 2011).

[18] Article 27 states that "The Parties may permit the use of coca leaves for the preparation of a flavouring agent, which shall not contain any alkaloids, and, to the extent necessary for such use, may permit the production, import, export, trade in and possession of such leaves" (Laniel 2005).

[19] The principal market for cocaine produced in Bolivia is the United States. "According to the drug enforcement agency the estimated cocaine consumption (in the U.S.) was 34-41 metric tons in 1981, 45-54 metric tons in 1982, 50-60 metric tons in 1983, and 85 metric tons in 1984, 100 metric tons. By the early 1990s, the best estimates went to over 500-800 tons of cocaine on delivery to northern markets [including Europe] (Blanes and Flores 1984 p.168, Gootenberg 2003 p.34).

[20] The price of Bolivian coca went up 1900 percent between March 1979 and September 1980 (Flores & Blanes1984 p.121).

[21] Needless to say, in communities where coca is unavailable life does go on. "Hallpay is one thread in the total fabric of Andean life; without it the fabric is badly frayed but does not disintegrate. Social relations continue without the backdrop of coca, signaled

by the exchange of endearments, food, alcohol and, increasingly, cigarettes. My impression is that as coca use diminishes, the consumption of cigarettes and alcohol (particularly commercial beer and aguardiente or sugar cane alcohol) increases. Alcohol is disastrous as a routine medium of social interaction, especially in a culture emphasizing ritual intoxication. The long-term deleterious effects of cigarette smoking are well known, especially in an environment conducive to respiratory ailments. This provides a striking contrast with the increasing evidence for coca's beneficial effects and the lack of evidence for negative consequences of long-term coca chewing" (Allen 1986 p. 45).

[22] "If I haven't coca it should be as if I was in poverty and as I had no food. That's what the missing of coca represents for me." (Sandagorda 1980 p.152)

[23] As much as 60% of banana crops are typically lost because of transportation, handling, and marketing problems. (Flores & Blanes 1984 p.210)

[24]As one Bolivian put it "If there were real development, all our members would change to another crop .., but there is no market for these products yet. As far as we are concerned this 'development' is a deception by the government. So we continue with coca." (Nash 1992 p.A4)

[25] In his youth, Evo Morales was traumatized when his neighbor in the Chapare was burned alive for resisting drug enforcement agents, and Evo himself was later tortured and left for dead by them as well (Dangl 2007a).

[26] The policy of "coca with development" begun under the administration of President Jaime Paz Zamora was aimed at promoting "the health, nutritional, and other values of the coca leaf and open legal international markets for it and benign products derived from it, like soda and toothpaste." (Healy in Leons 1997, p. 239)

[27] The aim is to commercialize coca leaf as an aromatic tea in its completely natural form, without being subjected to any processing or treatment. It is simply dried, ground down and packed into a small bag of filter paper (cocamama.com).

[28] "The leaf's ability to stunt appetite could provide a natural cure to the world's obesity epidemic" (Arie 2006).

[29] Silvia Rivera argued that coca industrialization "is the way out of drug trafficking." By bringing coca cultivation into the legal economy, her case goes, industrialization will allow the government to control and tax the supply of coca leaf. It will also raise the price of Bolivian leaf, which will encourage traffickers to go elsewhere" (Kurtz-Phelan 2006)

[30] Bolivia's population has approximately doubled in the past 30 years (Lahmeyer 2003)

[31] "The Study on the Coca Leaf has completed six of the eight countrywide statistical surveys and scientific studies foreseen. The studies have analysed the changes in consumption patterns and industrialisation of coca production in Bolivia and have generated information on the ancestral and ritual use of coca leaves. The study on the traditional and legal coca consumption in households and coca production could not be completed under this action; however its conclusion will be assured respectively by the national Statistical Institute and by other EU cooperation funds.
The results will be available in the second semester of 2010" (European Commission 2009a & 2009b.)

[32] U.S. officials – fearful that even a modest change to the 1961 convention could call into the question the prevailing international drug control regime – are leading the charge against a widely accepted indigenous practice in Bolivia, and they have rallied numerous other countries to also formally oppose Bolivia's proposed amendment. In the process, the U.S. is undermining respect for indigenous rights, torpedoing the ongoing negotiations for a new framework agreement for U.S.-Bolivian relations, and potentially straining relations with other South American countries. Such behavior is downright **shameful** (Youngers 2011)**.**

[33] The coca leaf is one of the great jewels that life has bestowed on humans, and this is how inhabitants of the Andes and Amazon understand it as for centuries coca has been an integral part of their daily life. Modern science has also come to recognize the great nutritious, medicinal, cosmetic, and spiritual value of "mother coca", which in its time came to surprise kings and other members of the European elite.
There are, nevertheless, some stupidities that we humans commit when establishing our imperfect relationship with the reality and wisdom. Among them they are the wars that we wage against our very existence. In this manner, we have managed to shield ourselves in a supposed "war against drugs" in order to question the mere existence of certain plants, distorting their true nature and meaning while alienating ourselves from their intrinsic values and wisdom.
Since it was added to the United Nation's List of Narcotics in 1961, the coca leaf has been a prisoner of this international system of control which defends and exacerbates these distortions of reality. While the beneficial uses of the coca leaf encounter numerous obstacles, the business of war and destruction built on the pillars of "drug control" strategies continues to flourish. Nevertheless coca – an intrinsic part of Andean-Amazonian life and identity – continues to be strong, flexible and resistant. Its re-evaluation, the continuous process of rediscovering people's aspirations, guides to us towards a better understanding of our history, identity, and actions, with all its successes and mistakes. Acción Andina seeks to contribute to this rediscovery by collecting and organizing data, carrying out studies, facilitating dialogue, and by promoting a healthy coexistence with the coca leaf. (Roncken 2007)