

COMMAND AND COUNTERMAND: CUBA'S SUGAR INDUSTRY UNDER FIDEL CASTRO

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The last fifty years have been the most turbulent in the long history of the Cuban sugar industry.¹ On the heels of the revolutionary movement's rise to power came agrarian reform, nationalization of the sugar mills and the transfer of Cuba's entire sugar industry—except for small growers—into state ownership, entailing the creation of a host of new institutions. An unforeseen shortage of farm labor catapulted Cuban sugarcane agriculture into new technology. The rupture of relations between the island and its northern neighbor triggered the redirection of Cuba's sugar exports and of the sourcing of its imports of technical inputs—Washington's abolition of the Cuban sugar quota in the United States having the unintended consequence of switching the greater part of Cuban sugar exports from a shrinking to a growing market. That, in turn, lent momentum to a drive to expand Cuban sugar production that culminated in an all-time output peak of some 8.5 million metric tons in 1969/70.

Uniquely among Caribbean islands, Cuba at the end of the 1980s still resisted the general decline of sugar industries in the region. In the 30 years following Fidel Castro's entry into Havana, Cuba's sugar production had grown by 40 percent and the volume of its sugar exports by a third, maintaining its position as

the world's largest sugar exporter, although its share of global output had fallen from around 12 percent to under 8 percent. As in prerevolutionary times, sugar remained the mainstay of the country's foreign trade and the principal earner of foreign exchange. The growing and processing of sugarcane still constituted, after the commercial sector, the biggest branch of the Cuban economy, alone accounting for a tenth of the social product in 1989.

Despite heavy investment in the industry, its performance in the second half of the 1980s signaled that a plateau had been reached, short of the output level planned and casting doubt on the credibility of further growth projections. In any event, the collapse of the Soviet Union and the dissolution of the Council for Mutual Economic Assistance in 1991 spelled the end of an era. The disastrous consequence for Cuba was not so much a loss of markets as the discontinuance of the premium prices and credits received from the Soviet-led bloc that had supported not only the profligate use of resources in the sugar industry but the Cuban economy as a whole.²

In the resultant economic crisis, the sugar industry was starved of the imported inputs, such as fertilizer and fuel, on which it had become increasingly dependent, and of the investment capital to maintain its

1. For details of the developments in these years, see Pérez-López (1991), Alvarez and Peña Castellanos (2001) and Chapters 1 to 4 and 8 to 9 in Pérez-López and Alvarez (2005).

2. While the smaller central and eastern European outlets disappeared, Russia and China—Cuba's main markets—remained. But in 2005, Cuba supplied only just over 6 percent and roughly 28 percent of total Russian and Chinese sugar imports respectively (*F.O. Licht's International Sugar and Sweetener Report*, 2006).

fabric. Sugarcane yields and total sugar production fell steeply. A reorganization of agriculture in 1993, in part aimed to raise efficiency, whereby most of the state farms were converted into so-called Basic Units of Cooperative Production (UBPCs), brought no palpable improvement. Neither did a drastic restructuring of the industry in 2002, involving the closure of a large number of mills and the switching of more than half the land under or reserved for sugarcane to other uses. Further cutbacks in 2004 and 2005, coinciding with a severe drought, have pared the two most recent crops down to a level not seen since the early years of the republic. On the world stage, Cuba has been reduced to a bit player, fulfilling export commitments in part by importing sugar for domestic consumption.

Throughout these years, Cuba's sugar policy has been directed by Fidel Castro who has also intervened at crucial times in operational matters. From a corporate viewpoint, the predominant state-owned sector of the industry could be likened to a large company³ in which the successive heads of MINAZ, the sugar ministry, have served as chief executives at the pleasure of a dominating chairman who not only dictates the strategy but also intrudes into the day-to-day activities of the business. Of course, the parallel between business and the Cuban sugar industry under Castro does not stretch very far. It is unlikely that Warren Buffett, the Sage of Omaha, and his associate Charlie Munger would have lasted at Berkshire Hathaway as long as they have, had they performed like the Cuban sugar industry's management team.

The purpose of this paper, however, is not to speculate on the historical, political and psychological factors that may explain the longevity of the Castro regime⁴ but to reflect on the role of organization, governance and management in the ups and downs of Cuban sugar. Needless to say, the usual caveat concerning the limitations of outside views applies here with particular force; the full story cannot be told until former officials can be interviewed and the archives examined.

LAND REFORM, NATIONALIZATION AND STATE OWNERSHIP

To older students of Cuba's sugar industry, many of the organizational and managerial phenomena observed in recent times must appear, in Yogi Berra's memorable phrase, "it's déjà vu all over again." Flaws in policy and execution in the early days of the revolutionary regime were a foretaste of things to come.

Institutional Changes

Not surprisingly, given that collectively it was the biggest landowner, the sugar industry bore the brunt of the postrevolutionary changes in land tenure. Mild enough in its ceiling on landholdings (30 *caballerías*—about 400 hectares—with generous exceptions), the 1959 agrarian reform law complied with the 1940 Constitution's ban on *latifundia* and was foreshadowed by Castro's *Moncada* and *Sierra Maestra* land reform pledges. More land passed into government control with the expropriation of the sugar mills in 1960 (Bianchi 1964:103, 402 note 10).

Table 1. Land Distribution, 1962 (*in caballerías and percentages*)

	Total Area		Cane Area		Cane Production
	Caballerías	Percent	Caballerías	Percent	Percent
Cane Cooperatives and People's Farms	80,000	34	32,648	36	34
Farms 5 <i>caballerías</i>	79,846	34	33,685	37	38
Farms > 5 <i>caballerías</i>	74,578	32	24,215	27	28
Total	234,424	100	90,584	100	100

Source: Menéndez Cruz (1962a:1–2)

3. In 2004/05, MINAZ produced less sugar than the transnational Südzucker group in its 11 factories in Germany alone.

4. Springing to mind is former U.S. Secretary of State Madeleine Albright's observation that "nothing strengthens a radical government more than Washington's overt antagonism" (*Financial Times*, 24 March 2006).

Against expectations, however, only some of the land seized was redistributed to individual farmers. Instead, some 600 cooperatives were created between June 1960 and May 1961 on somewhat more than 800,000 hectares of former *cañas de administración*, i.e., land owned and cultivated by or on behalf of the sugar mills (Bianchi 1964:108).⁵ These new entities were not traditional cooperatives but hybrids with characteristics of state farms. Although each cooperative was to be directed by a board elected by its members, its manager was appointed by INRA (National Institute of Agrarian Reform, then in effect the Ministry of Agriculture) and constituted the bottom tier of a bureaucratic hierarchy: 10 to 15 units were grouped in one of 46 associations (*agrupaciones*), each with an administrator, accountant and other administrative personnel, which in turn were subordinate to provincial offices that reported to the general administrator of cane cooperatives at the apex of the INRA pyramid (Bianchi 1964:109–10). As of mid-1962, following the first land reform, around two-thirds of sugar industry land still belonged to the private sector (Table 1).

This half-hearted essay into cooperativism was abandoned in August 1962, when, a little over two years after the first cane cooperatives had been established, they were rebranded state farms (Menéndez Cruz 1962b)—a move reversed in 1993 when these were recast again as UBPCs. The second agrarian reform in 1963 nationalized landholdings in excess of five *caballerías*. With that, the share of private growers in the national sugarcane supply reportedly dropped to 30 percent. Some 51,700 small cane farmers participated in the 1964 crop. At the end of that year, these growers were said to hold 67,664 *caballerías* in total area, of which 26,660 *caballerías* were dedicated to cane, or on average roughly 1.3 and 0.52 *caballería*

per farmer respectively (Regalado 1965:37–38). Meanwhile, on the processing side of the industry, an INRA department that initially administered a dozen sugar mills taken over by the state (Primera Reunión Nacional de Producción 1961:139) had grown into a consolidated enterprise (*empresa consolidada*) under the Ministry of Industries, centrally running 152 mills—after the closure of nine mills—plus other installations. That became, in 1964, the new Ministry of Sugar (MINAZ).

Supporting Circumstances

From the start, two characteristics marked the new structures of the sugar industry—centralization and gigantism. These gained plausibility as policies, beyond their political and ideological motives, from several factors:

- Cuba is not divided by great rivers or mountain ranges, nor do cultural or linguistic barriers impede communication along the length of the island (Castañeda 1997:218).
- The advent of electronic computers, with which it was hoped to be able to control production processes and achieve effective economic planning (Noyola 1962).
- Dearth of technical and professional cadres (Jolly 1964:176–77; Ritter 1974:92–95), coupled with the idea that the existent were better deployed centrally than dispersed (Gutelman 1967:69–70).
- The workforce on the sugar mill administration cane lands was composed mainly of wage laborers, albeit rural ones, not peasants (Chonchol 1963:112).
- Evidence from several countries indicating that large plantations tended to have higher cane

5. The figures vary. Menéndez Cruz (1961:36) put the area of cane cooperatives at more than 76,000 *caballerías*, evidently referring to the total area. Rodríguez (1963a:24–25) reported specifically a cane area of 33,800 *caballerías* in state cane farms, out of a total area of 66,100 *caballerías* in these enterprises and out of a total cane area of 40,900 *caballerías* in all state enterprises. Boorstein (1968:205) recalled “It was not easy at that time to get accurate figures on cane acreage,” a problem still dogging analysts 40 years later. Since size is one of the issues addressed in this paper, land measurements will be given in metric units only if they so appear in the source, as conversion from *caballerías* may convey a misleading impression of precision and of the source’s spatial perception. One *caballería* equals 13.42 hectares.

yields per hectare than small growers (Hagelberg 1974:76–83).⁶

Flaws in Policy and Execution

Whatever the advantages that could be adduced for the policies of centralization and creation of large state enterprises (Ritter 1974:105), their defects emerged as quickly as they were implemented.⁷ Instead of proceeding in small but frequent steps, the revolutionary leadership precipitously took on the reform of an entire industry, then by far the most important in Cuba, with little understanding of its complexity and internal mechanics. The resultant disorganization was succinctly described in a report on the performance of the cane cooperatives: “In respect of equipment, we have plows and no tractors, and we have tractors and no plows” (Primera Reunión Nacional de Producción 1961:51).

The management of the sugar companies’ administration cane lands was uprooted down to the lowest echelon on their conversion into cooperatives. Aguirre (1961:23) revealed that the new enterprises were “subsidizing nearly 1000 former foremen (*mayorales*) displaced by the new social organization into which they did not fit.” Less than a year later, Menéndez Cruz (1962b:39–40) wrote that “one of the gravest errors” had been to dismantle the internal organizational apparatus instituted by the former owners without replacing it with new organizational forms. Because the administration at the base rested on the assumption that “the new cooperative members

would spontaneously organize and direct all the work of agricultural production,” only a “rickety management team” was put in place, with one man in charge of a cooperative’s cane production where the former owners had four or five. Moreover, the new managers had much more to do than their predecessors, being tasked with putting into effect crop diversification and constructing cowsheds for milk production, on top of fulfilling “their intrinsic function as political leader of the cooperative.”

Could Menéndez Cruz, then head of the *empresa consolidada* of sugar mills, have exaggerated the managerial deficiencies in order to justify the rebranding of the cooperatives as state farms? Possibly.⁸ But even if partially discounted, these failings loom large when seen against the background of the size of the cane cooperatives—on average more than 1000 hectares—and the additional difficulty that they did not usually form solid blocks. Another of the organizational errors cited by Menéndez Cruz (1962b:39) consisted in “putting together farms distant one from another in the same cooperative” with the result that its members “in practice, did not feel associated.”⁹

In fact, the cooperatives were barely established when the regime was alerted to its failure to give the cooperativists a sense of stakeholdership in the new enterprises. After traveling around the country, René Dumont, the noted French agronomist, told Che Guevara in August 1960 that, judging by what he had seen and heard, workers on the cooperatives felt

6. The figures in Menéndez Cruz (1962a:1–2) suggest that cooperatives and people’s farms had somewhat lower cane yields per land unit than private farms, a conclusion also reached by Bianchi (1964:133–34), but in conflict with the 1962 figures in the official statistical yearbook, according to which national average sugarcane yields in the state sector were on the whole higher than those in the private sector up to 1967, although the gap narrowed. From 1968 onwards, yields in the non-state sector, nationally, have consistently surpassed those of the state sector (Alvarez and Puerta 1994:1666–67; Hagelberg 1974:78; Nova González 2004:105; Pérez-López 1991:29–32, correcting for a typographical error).

7. Among the earliest critical observations—and all the more noteworthy for coming from a sympathizer of the Revolution who advised on the initial phase of the agrarian reform—are those of the Chilean agricultural economist Chonchol (1963) concerning overstretched organizational capabilities, gigantism, the centralization of decision-making, and overly ambitious targets of farm product diversification. The sharper tone of Gutelman (1967) probably was inspired by the fact that with the passage of time the incongruities became more obvious.

8. An ideological objection to the cooperatives was that they could become the breeding-ground of a “contradiction” between the cooperative members and the non-member casual workers employed by them (Menéndez Cruz 1962b:39).

9. Menéndez Cruz did not say how state farms would be any better at integrating dispersed holdings. The extent of the dispersion is illustrated in Rodríguez (1963b:76–79) and was only partially remedied by subsequent reorganizations of cane lands (Pollitt and Hagelberg 1994:557–559).

they had become salaried employees of the government and not part of an enterprise that really belonged to them (Dumont 1970:50–51). Evidently, the attitudes of these workers were rather more nuanced than the proletarian class consciousness that was claimed to be their sole motivation.

As the cane cooperatives did not survive beyond infancy, it will never be known whether their members would eventually have acquired the mindset of farmers. In any case, they were not encouraged to do so. “The principal and one of the most widespread of the bad work habits,” according to Menéndez Cruz (1962b:40), “was that the managers of the cooperatives paid no attention to the directing board elected by the members. . . . the membership was not periodically informed about the performance and activities of the cooperatives.”

The Policymaker

It is generally agreed that, regardless of the input of other leading figures, Fidel Castro has had the final say on policy in Cuba since 1959.

While the outside observer Bianchi (1964:402, note 1) was disinclined to speculate on why land reform had taken the turn it did, he clearly indicated who he thought responsible:

There is no point here in discussing the evolution of Castro's thought on the *type* [emphasis in the original] of land reform to be implemented since his speech before the court in 1953. Suffice it to say that in practice the emphasis shifted from reliance on individual, owner-operated holdings and cooperatives of the traditional type to more collectivized forms of agricultural organizations.

The insider Aguirre (1961:19) put it plainly:

The initiative to create cooperatives in the cane latifundia belongs entirely to Fidel Castro. . . . Fidel opposed the idea of dividing these lands and distributing them in pieces among the peasants and agricultural workers.¹⁰

To Carlos Rafael Rodríguez, then president of IN-RA, the “creative contribution of *compañero* Fidel Castro lay precisely in not following the known path of agrarian reforms carried out in other countries, of distributing the latifundium land, but, on the contrary, to keep these lands as state property and preserve the production units without division” (quoted in Menéndez Cruz 1962b:34). After they were converted, Rodríguez (1963a:8) asserted that Castro conceived the cooperative as a transition stage to the state farm. The rebranding—a decision in which, he claimed, all cooperativists participated—shortened a process that had been programmed to take several years.

Castro himself has spoken of his personal imprint on the course of Cuba's land reform.

- On the original concept:

... when we were marching towards the Sierra Maestra, where the law was promulgated, I was giving the draft the last reading and found that it was all about a great land distribution and there was not a word of cooperative. ... I wrote a little article that must be in the law—if nobody forgot it—speaking of the cooperatives. ... Because already at the time of Moncada we were talking about cooperatives, and before Moncada we had become convinced that the parcel of land was not the solution to the country's agricultural and economic problems (Castro Ruz 1977; in a similar vein, Castro Ruz 1982).

- On the move from cooperative to state farm:

In my judgment, we were going to create an artificial cooperative, converting agricultural workers into cooperativists. From my viewpoint ... I was partial to converting those cooperatives, which were of workers and not peasants, into state enterprises (Castro Ruz 1982).

- And on the delayed formation of genuine agricultural production cooperatives (CPAs) among private farmers:

10. Aguirre (1961:19–20) went so far as to argue that division of the cane latifundia would have run counter to the interests and aspirations of the workers employed on them.

... in reality we should have initiated this cooperative movement before. ... I assume my moral responsibility for the delay of several years experienced by the cooperative movement (Castro Ruz 1982).

Primacy of Ideological Preconceptions

In these speeches, Castro projected a set of ideological concepts, not altogether essential to sustain political power, that guided his approach to achieving economic and social objectives. Featuring prominently was a belief in the vanguard role of the working class, on which rested the argument that to recast the wage workers on the former sugar company administration cane lands into quasi-peasant members of cane cooperatives represented a step back in social evolution (Castro Ruz 1977, 1982). And if the labor employed on these lands were wage workers, he reasoned, they were like factory workers, and you do not convert factory workers into cooperative owners of their plant (Castro Ruz 1982)—which overlooked both a history of industrial cooperatives in other countries and the fact that sugarcane is not grown hydroponically under controlled conditions in greenhouses. “I had a predilection for the state enterprise,” he declared in 1982. “I have always thought, and still think, that the state enterprise is superior. I always liked the idea that agriculture would develop like industry and that the agricultural worker would be like an industrial worker.” Agriculture outside the state sector was depicted dichotomously as *latifundium* and *minifundium*, ignoring the multifaceted prerevolutionary *colono* system in which farmers grew cane on land leased from the mills (Bianchi 1964:79, 108), and he seemed surprised by the success of the CPAs.

UNREALISTIC TARGETS, WASTED RESOURCES

In the first flush of victory, Castro was not the only figure in government to proclaim irrationally exuberant economic targets, not underpinned by existing

capabilities, not matched by provision of the necessary inputs, and formulated without fully appreciating either the effects of the economic changes initiated by the Revolution or the impact of the U.S. embargo. But he set the tone.

Flawed Diversification Program

Hardly organized, the cane cooperatives were urged to diversify into lines of production in which they had little or no experience. Castro seemed to think that growing cane took little effort:

It is no longer a question of you producing the needed cane, since this is superguaranteed. Now all the world ... can count with the necessary cane and with the necessary sugar, that is no longer a problem. ... There is more than enough cane. ... we need other products (speech, 16 August 1960, quoted in Sulroca Domínguez 2002:123).¹¹

In the event, the 1961 sugar crop came in at close to 6.9 million metric tons, until then the second highest volume in Cuba's history. Celebrations of the success—indeed remarkable since it was achieved despite the distraction of the Playa Girón (Bay of Pigs) invasion—did not dwell on how much it owed to the very favorable weather in the 1960 growing period and the harvesting of most of the leftover cane that had previously been held as a reserve, or on the fact that, owing to their delayed formation, the cooperatives had basically taken over existing plantations (Bianchi 1964:112–13).

Affected by the diversification program and poor weather, production declined sharply in the next two crops, but in 1965 again exceeded 6 million tons, following another shift in policy, now to make the sugar industry the engine of growth with a target of 10 million tons in 1970. Even so, average sugar output in 1961–65 was down almost 7.5 percent from the previous five years, not counting the sugar equivalent of high-test molasses, an alternative way of utilizing cane, produced in 1956–60.¹² The 1966–70 crops,

11. The demolition of 10,000 *caballerías* (134,000 hectares) of cane under the diversification program encountered some opposition. Aguirre (1961:24) alluded to “certain hesitations in this regard noticed among some people.” One dissident was Ramón Castro Ruz—in old age appointed “principal adviser” to sugar minister Ulises Rosales del Toro and dubbed “the Canegrower-General” in *Granma*, the Cuban Communist Party organ—who was publicly criticized for his stance by his younger brother, according to Boorstein (1968:185).

including the all-time record 1970 harvest, improved on 1956–60 performance by a mere 1.9 percent.¹³

Contributing to the confection of unrealistic plans were myths of ideal year-round weather and inexhaustible soil fertility, which generalized across Cuba the excellent land in some parts and ignored the special problems of soil maintenance in the tropics. Typically, although on the introduction of food rationing in 1962 he had acknowledged a need to learn “to analyze things objectively” (quoted in Bianchi 1964:143), Castro theorized a few years later that if Florida could develop large-scale citrus fruit production “on soil worse than ours” and, unlike Cuba, running the risk of winter frosts, “there is not the slightest doubt that we are going to have a citrus industry superior to that of Florida.” Moreover, some 100 million coffee bushes were to be planted in Havana province under the fruit trees, and already by 1970, Havana was going to be totally self-sufficient in coffee (Castro Ruz 1968).

The 10–Million-Ton Drive

The classic case of overestimating capabilities is still the plan to produce 10 million tons of sugar in 1970. Without conducting another review of this project and the costs incurred, suffice it to note just two pieces of backdrop: the impossibility quickly enough to substitute capital for labor in the cane harvest and the timely signals to scale down the target that were ignored.

After decades of chronically high unemployment, particularly in rural areas, the first signs of a labor shortage in the 1961 milling season came as a sur-

prise. Initially attributed to the diversification program and the mobilization of worker militias to repel the Playa Girón invasion (Menéndez Cruz 1961:44–45), the causes were both deeper and more permanent. Field investigations by Pollitt revealed multiple factors—migration from rural to urban areas, expansion of urban employment which eroded the supply of town-based labor that had been an important source of seasonal farm manpower, increased construction activity, uplift of the smallest and poorest farmers so that they no longer had to work for others, guaranteed year-round employment for state farm workers, and so on (Pollitt and Hagelberg 1994:548–51).¹⁴

The government responded with a crash harvest mechanization program which grossly underestimated the practical difficulties. Beyond partial mechanization (manual cutting and machine loading), mechanized cane harvesting presents enormous technical problems. Moving from manual reaping of whole stalks (with manual or mechanical loading) to machines that cut, clean and load the cane in a continuous flow (chopper harvesting) is no minor technical change, needing little adaptation of existing skills and knowledge, but a system shift in the entire production process, physically and organizationally, from field layout to mill reception facilities. At the beginning of the 1960s, Hawaii and Louisiana were the only sugarcane areas in the world to have mechanized both cutting and loading (by very different methods) and Australia was still developing machines (Hagelberg 1974:93–97). Forty years later, an estimated 80

12. For figures on the output of high-test molasses, invert syrups and fodder sugar from 1931 to 1960, see Hagelberg (1974:132–33).

13. Production as reported by MINAZ. For a discussion of the basis of these figures and of discrepancies between different statistical sources, see Hagelberg (1974:55–60) and Pérez-López (1991:235–40).

14. Pollitt (1971) gave examples of the large discrepancies encountered in 1965 in Cuban estimates of the agricultural labor force at various levels. In his view, “the Revolution inherited an agricultural system defined like many others to possess ‘abundant’ or ‘surplus’ labor but in which *there was no great, easily tapped ‘reserve army’ of unemployed workers during the months of peak labor requirements*” [emphasis in original]. Not helpful to an understanding of the labor situation was the gradual post-revolutionary inflation of—and obliteration of seasonal variations in—the number of unemployed estimated to have existed before the Revolution. By 1964, the flat figure of 700,000 unemployed—close to twice the average of the four quarters between May 1956 and April 1957 in the original report and more than 50 percent higher than the number in the worst quarter—was firmly embedded in the official mythology.

percent of the world's sugarcane was still being harvested manually (Meyer et al. 2006:110).¹⁵

In the end a notable achievement, harvest mechanization in Cuba entailed a long and costly learning process, in part owing to rash decisions to build or import large numbers of insufficiently tested machines that were soon abandoned because of various defects (Herrera 1965:22; Ritter 1974:178). The U.S. embargo prevented the transfer of experience from American cane areas—although it did not impede collaboration with a West German firm nor acquisition of hundreds of Australian chopper harvesters—while the relationship with the Soviet Union made it natural to look in that direction, where there was no experience, for assistance. Only 1 percent of the 1970 crop was mechanically cut. It took another 20 years until chopper-harvested cane passed the 70 percent mark. But while the need for manual cane cutters was greatly reduced, the labor-saving in terms of total harvest workforce was considerably less than simplistic comparisons of the notional average daily output of manual cutters and chopper harvesters suggested, not to mention other direct and indirect system effects involving the expenditure of capital and labor, such as the insertion of cleaning stations between reaping and milling. Until the small crops of recent years, tens of thousands of urban workers and young people continued to be mobilized annually for the harvest.

If harvesting capability was known to be a critical bottleneck since 1961, why was the 1970 target set at 10 million tons?

- The way Boorstein, an American economist who worked for various Cuban government agencies between 1960 and 1963, remembered it, the discussions to work out how to increase sugar production came after Castro had announced the goal (Boorstein 1968:204–05).

- Dumont (1970:214) recalled telling the government in early 1964 that the 10-million-ton goal could not be reached before 1975, if then.
- According to the French agricultural economist Gutelman (1967:176), the initial draft of the plan fixed the target at 8.5–9 million tons. To Gutelman, the 10-million figure seemed “irrational” on the grounds that the installed milling capacity was enough for 7 million tons and, with an investment of 150 million dollars in the industrial sector, could reach 8.5 million tons. But to pass from 7 to 10 million tons required an investment of close to one billion dollars in industry and agriculture, implying a declining return to capital.
- A series of articles in *Cuba Socialista* (Borrego Díaz 1965; Herrera 1965; Regalado 1965), reciting the challenges to be met, can be read as having been meant to sound a note of caution (Pérez-López 1991:13). However, its authors were not strong and independent enough to force an open debate.

By late spring 1967, after an effective milling period of 101 days—the fourth longest since 1951—had brought in only just over 6.2 million tons, it was clear that 10 million tons could not be reached. But as Ritter (1974:186) says, the target became an obsession to Castro. According to a one-time British ambassador in Havana (Coltman 2003:229), Castro ordered that steps which might have increased the 1969 crop should be abandoned in order to concentrate all efforts on preparations for the titanic struggle to produce 10 million tons in 1970.

Entrenched, even as the first stage of the 1969/70 crop was pointing to a likely shortfall, Castro launched into a cosmic flight of fancy—of all places, before a graduating class of economics students:

Now, I can indeed assure you that, at the level of already familiar techniques, our country, because of its natural conditions, could produce more than 20 mil-

15. Although focused on the question of green versus burnt cane harvesting systems, Meyer et al. (2006) give a succinct overview of the many aspects to be taken into consideration in a mechanical cane harvesting regime. Details of the development of mechanical harvesting in Cuba can be found in Pérez-López (1991:57–74), Pollitt and Hagelberg (1994:552–64) and Pollitt (2005:48–53).

lion tons of sugar, our country could produce some 24 or 25 million tons of sugar with the 130,000 caballerías that are perspectivevely assigned to cane, which practically is what we have now, and some 15,000 caballerías more; from 20 to 25 million, at the level of the techniques known now. Maybe, with the techniques that might be known in 1980, one would have to put the potential at 27 or 28 [million tons] (Castro Ruz 1969).

ORGANIZATION AND MANAGEMENT

Collectivization, oversized production units and central decision-making engendered diseconomies of management (Figueroa Albelo 1996:11) and set off a long chain of reorganizations and incentive schemes aimed at overcoming the spatial, logistic, communications, managerial, and behavioral problems caused or aggravated precisely by the economic model implanted.

Structural Mutations

A chronology of the structural changes in the state sector in Sulroca Domínguez (2002:31) conveys a picture of perpetual organizational tinkering in the state sugarcane sector (see also Alvarez and Peña Castellanos 2001:5–6):

- 1959–62: Cane cooperatives
- 1961–63: Cane farms, administered farms
- 1964–66: Group, cane farm, lots
- 1967–69: Development zones, cane plan, lot
- 1969–76: Cane plan, district, lots
- 1976–80: Cane enterprise, agroindustrial complex, district, lots
- 1980–84: Agroindustrial complex, district, lots
- 1984–92: Agroindustrial complex, permanent production brigades, area, lots
- 1992–93: Agroindustrial complex, cane farms
- 1993–97: Agroindustrial complex, state farms (Youth Work Army, Armed Forces, Interior Ministry), UBPCs
- 1998–99: Agroindustrial complex, state farms, UBPCs notionally in the cooperative sector

A common feature of these units was gigantism. According to Sulroca Domínguez (2002:32), cooperatives averaged 105 caballerías, districts 250 caballerías, permanent production brigades 150 caballerías, state farms 166 caballerías, and UBPCs 144 caballerías. The districts were divided into lots of

around 30 caballerías, each lot containing three to eight “blocks” of cane fields (Sulroca Domínguez 2002:15). While at pains to accentuate the positive, Sulroca Domínguez (2002:15) listed among the defects of the districts—aside from their excessive size—lack of autonomy, not functioning as economic units, command-style management, little involvement of the workers in decision-making and scant linkage between their efforts and the results. Similar deficiencies subsisted to a greater or lesser degree in the permanent production brigades and cane farms established later (Sulroca Domínguez 2002:20–21).

The conduct of Cuban state cane agriculture, in the view of Sulroca Domínguez (2002:30), conformed to a “centralized model of development” of increasing intensity. It was accompanied by the territorial enlargement of the organizational structures at the base as mechanization and “chemization” became essential means of progress. This process led to the formation of massive blocks of cane and the expansion of cane monoculture over an enormous area of the country, in contrast to the diversified model of farming that had existed at the beginning of the Revolution and that survived in the peasant sector.

In a system based on state allocation of resources and geared to achieving physical production targets, with little regard for costs, efficiency and effectiveness (Sulroca Domínguez 2002:23), centralized decision-making had to rely on administrative incentive schemes to obtain compliance with the state’s directives. Like the organizational structures, these schemes were designed on one-size-fits-all templates and underwent various mutations in the course of time, as at best they produced only modest improvements or were superseded by events (Alvarez and Peña Castellanos 2001:31–33, 53–54). Bureaucratic inducements, no more than organizational tinkering, could impede the wasteful deployment of resources and a relentless escalation of production costs (Hagelberg and Alvarez 2005).¹⁶

The UBPCs

The end of the preferential trade arrangements with the Soviet bloc wrote finis to the extensive growth of Cuba’s sugar industry. Under severe restrictions on imported production inputs and capital for renewal

in the resultant economic crisis, sugar output dropped by 46.5 percent from nearly 8.2 million tons in 1989/90 to under 4.4 million tons in 1992/93, chiefly because of lower agricultural yields. As part of a series of emergency measures to avoid total economic collapse, the regime then resorted to a new form of agricultural organization called Basic Units of Cooperative Production (UBPCs). In the last three months of 1993, 734 state cane farms with an average size of 2445 hectares were hastily split up and reorganized into 1556 cane UBPCs averaging 1069 hectares (Alvarez and Peña Castellanos 2001:49).

On the face of it, this step partially corrected the vice of gigantism, and the UBPCs have been widely seen as modeled on the agricultural production cooperatives (CPAs), formed earlier among private farmers, which had generally performed better than the state farms (Alvarez and Peña Castellanos 2001:47–48; Deere and Pérez 1999:186, 222, 224; Figueroa Albelo 1996:19; Nova González 2004:110; Pollitt 2005:59–60).¹⁷ But while the CPAs no doubt furnished the example to be emulated, the precedent in the sugar sector was set by the cane cooperatives of the early 1960s—and then discarded as retrograde.¹⁸ Like those cane cooperatives, but unlike the CPAs, the UBPC membership was drawn from the working class, not the peasantry, as was reflected by the fact that whereas CPA members belonged to the National Association of Small Farmers, the new UBPC members continued to be represented by their old trade union.

As defined by the Communist Party's Politburo, at whose initiative they were created, the UBPCs had four principal objectives (MINAZ 2003):

- To link the worker to the site.
- To be self-sufficient in food and to improve the housing and living conditions of the members and their families.
- To relate income to output.
- To exercise autonomy in management.

A deep depression is not the best time to set up a new business,¹⁹ and the UBPCs were taking over run-down plantations, although there was briefly some relief in the mid-1990s when foreign banks and trade houses financed imports of needed inputs (Alvarez and Peña Castellanos 2001:51). Under orders to cut immature cane that would normally be held over to next year and to extend harvesting into the rainy season, the industry was in effect being run for cash at the expense of its longer-term prospects.

Not surprisingly, hopes that the cane UBPCs would restore the sugar industry to a sustainable footing remained largely unfulfilled. Probably their chief accomplishment was to tide their people over the worst years of food shortages in the 1990s, although they fell far short of reaching self-sufficiency (MINAZ 2003; Sulroca Domínguez 2002:104). Between January 1994 and September 2001, the number of cane UBPCs reportedly shrank from 1533 to 920 (MINAZ 2003). Their total agricultural area, and the areas reserved for and actually under cane, declined less, so that there was a return to gigantism, with the average agricultural area standing at 1541 hectares in 2001, of which 1329 hectares were reserved for cane. Cane yields saw no significant improvement in the

16. The evidence of resource waste is understandably anecdotal. Forster (1989:251–52) reported: “Tractors have been imported only to fall into disrepair and be left idle due to a shortage of skilled mechanics. Fertilizers are spread liberally but unevenly, failing to produce anticipated increases in yields. Sugarcane which we observed in early 1980 often showed signs of poor fertilizer application. Dams have sometimes been built without irrigation ditches to carry the water. Finally, we observed some indication of uneven mechanization on several state farms. Tractors might be bought without a sufficient variety of implements.”

17. The superior performance of the CPAs did not restrain tendencies to impose greater state control on them (Deere and Pérez 1999:213–18; Figueroa Albelo 1996:17; Luis Díaz et al. 1997:142).

18. Inconsistencies in the legal bases upon which the UBPCs were founded as well as the nature of their membership evidently caused Pérez Rojas and Torres Vila (1996:48–56), among others, some difficulty to decide where to put them in the cooperative spectrum.

19. “It has to be recognized that the UBPCs arose out of a bankrupt business” (Villegas Chádez 1996:116).

crops to 2001/02, peaking at 34.3 metric tons per hectare in 1999/2000.²⁰ The number of cane UBPCs showing a profit had its high point with 67.8 percent of the total in the first year of operation; but given the system of administered prices, it is questionable what weight should be attached to this indicator.²¹

If the deficiencies of governance and management in the cane UBPCs have remained uncured, it has not been for want of exposure, even in official publications. One major issue has been the degree of autonomy that the cane UBPCs have been able to exercise. Yet how much freedom of action did the regime ever intend to allow them? The 1993 MINAZ resolution giving effect to the Council of State's decree that called them into being declared the cane UBPCs to be part of the production system of the sugar agroindustrial complexes and made it their first priority to increase cane production, a change in cane acreage requiring the prior approval of the MINAZ territorial delegate (Alvarez and Peña Castellanos 2001:46). Of course, that could not be the reason why the principle of autonomy was violated, and the ministry's review of the first ten years (MINAZ 2003) blamed the UBPC chiefs for "lack of economic and managerial know-how"²² and the sugar enterprises for "excess of tutelage and wish to direct . . . instead of orientating, advising and maintaining a contractual relationship."

Numerous investigators—almost all residing on the island and affiliated with Cuban institutions—have for years commented on the lack of UBPC autonomy and their members' insufficient participation in decision-making and underdeveloped sense of ownership. The observations in these respects have variously been linked to the stickiness of traditional methods of management, top-down command-and-control direction, the transfer of state farm managers to similar positions in the UBPCs, habits rooted in the economic model of the 1980s, paternalism and centralization on the part of MINAZ and its organs, the requirement that cane UBPCs transact all input purchases and product sales through MINAZ enterprises, lack of a clear division between state and cooperative affairs, absence of a cooperative culture, and ignorance of the rules (e.g., Alvarez 2004:88; Arias Guevara and Hernández Benítez 1996:128–30; Arias Guevara and Hernández Benítez 1998:109–12; Burchardt 2000:177–79; Carranza Valdés et al. 1996; Figueroa Albelo 1996:30; Leyva Ramón 1997:145, 148–49; Nova González 1998 and 2004; Pérez Rojas and Echevarría León 2000:154–56; Pérez Rojas et al. 1998:83–84; Pérez Villanueva 2000:87–88; Polo Científico de Humanidades 1995; Sulroca Domínguez 2002:52, 57, 65; Tristá 2002:231; Villegas Chádez 1996:106–08; Bu Wong 1998; Bu Wong et al. 1996).²³ It is generally agreed that in and of itself, as well as in interaction with other factors, such as the stability of the workforce and the availability of

20. Details of the many technical and operational causes of the low cane production and yields lie beyond the scope of this paper and readers are referred to studies such as Sulroca Domínguez (2002).

21. An extended look at the relationship between soil types and terrain and the costs of cane production led Sulroca Domínguez (2002:38–49) to conclude that in consequence of a uniform cane price across the whole country, more favorably located UBPCs could obtain greater returns with less effort, while others struggled to make a profit. Moreover, the peso-dollar exchange rate engendered distortions and perverse incentives (Sulroca Domínguez 2002: 73, 89). The evidentiary value of UBPC profitability is further undermined by the restrictions put on their ability to market non-cane produce (Torres Vila et al. 1997:203–04).

22. Sulroca Domínguez (2002:100–01) also speaks of the poor preparation of UBPC functionaries for their technical and managerial tasks. If true, this makes the size of the units all the more critical. It would also reflect on Cuba's vaunted achievements in education, particularly as he cites a 1997 MINAZ survey, according to which 77.5 percent of UBPC managers, 88.1 percent of the heads of economic departments, and 74.8 percent of the heads of production had had a middle-level technical or higher education. The problem would seem to be not that they were not educated, but how and in what they were educated.

23. Since the sucrose content and other quality characteristics of sugarcane are determined by variety, environment and growing conditions, and because its quality deteriorates rapidly after it is cut, the operations of growers and processors must, of course, be closely coordinated. Elsewhere in the world, this essential coordination is contractually defined and achieved by means of a cane payment system based on quality and by close contact between growers and the mill's field officers. A price system taking into account the sucrose in cane was to have been introduced in the 1998/99 harvest, but details are lacking.

food and housing, the way the UBPCs have been managed has strongly determined how they have performed. But there is no evidence that the system has fundamentally changed. As Figueroa Albelo (1996:18) pointed out, financial and participatory self-management demands recognition of the market, and that the regime has been reluctant to grant.

Restructuring or Requiesscat?

Suddenly, in the late spring of 2002, the government announced a long overdue restructuring of the sugar industry. Promises to restore output to 6 million tons or more were abandoned and replaced by a target of 4 million tons; 71 of the 156 existing mills²⁴ were closed and another 14 switched to by-products and derivatives; 62 percent of 2 million hectares of sugarcane land were to be shifted to other uses; and around 100,000 workers were to be redeployed in other jobs or further education. Little additional information was published, and the figure given for the cane area was far larger than that in fact planted to the crop. Thousands of meetings had purportedly been held to explain the changes and the industry's future to the workers; but as the decision had already been made, their participation cannot have been more than passive (cf., Pérez Rojas et al.:2004). MINAZ was tasked with numerous non-sugar activities that in effect made it a second Ministry of Agriculture.²⁵

Predictably, the result was disastrous. Adverse weather is only partly to blame. Missing from the restructuring were the vital ingredients of any exercise aimed at turning an industry around—new capital and changing the way business is done.

Sugar production has now sunk to a point where even a 4-million-ton target looks fanciful. Judging from the sparse evidence available, the drop has been not more than fractionally offset by gains in other lines of agriculture. The rise in the national average

cane yield is far smaller than was to be expected simply arithmetically from the abandonment of marginal areas. Anecdotal reports speak of damage to the engineering sector and dereliction in the countryside. Worker morale cannot have been boosted by hearing Castro declare that sugar was today the “ruin” of Cuba's economy and belonged to “the era of slavery” (EFE, 17 March 2005).

During the summer of 2005, plans were afoot to close at least another 40 of the existing 85 sugar mills and to take 33 percent of plantations out of production, in a second major downsizing of the industry (Reuters, 6 July 2005). Although a decision may have been put on ice, only 42 mills were set to operate in the 2006 crop (Varela Pérez 2006a).

Running an Industry, Caudillo Style

Castro's abhorrence of private enterprise has not kept him from occasionally revealing a proprietorial attitude in matters affecting Cuba's economy. So, in an early incident, he chided some guerrilleros turned farmers over a broken tractor: “Your apprenticeship is costing me very dearly” (Otero 1960:127). Or, more recently, at Havana's annual trade fair: “Imagine how much we would save producing a smaller quantity of sugar. I'd prefer to cut a million and a half [tons] than 2 million because with that million and a half we could have a reasonable profit” (Dow Jones Newswires, 8 November 2003).

Enough of Castro's interventions in the management of the sugar industry can be documented to characterize the style. What is not clear is on how wide or narrow a view he bases his decisions.

Known, for instance, is that Castro ordered the 2002 restructuring—on 10 April, to be precise (Varela Pérez 2003). It also appears that MINAZ had been studying a mill rationalization for some time, although the signals coming out of the ministry in the summer of 2001 pointed to expansion, rather than

24. Forty to 50 mills, in round numbers, had not worked in the preceding years.

25. Reminiscent of the incoherent plans and his own special projects of earlier years, Castro promised that “the Ministry of the Sugar Industry will use the surplus lands to produce vegetables, fruit, milk, meat and other food, as well as wood and paper” (Castro Ruz 2002). At a press conference, Ulises Rosales del Toro, the sugar minister, reportedly spoke of up to 28 lines of food, including buffalo dairies (Varela Pérez 2002).

contraction, of the cane area. Not clear, however, is whether Castro was moved to step in solely by the movement of world oil and sugar prices, the focus of his explanation to an audience of sugar workers in October 2002, aside from his naked claim that the restructuring would save 200 million dollars and bring in revenues of around 100 million dollars (Castro Ruz 2002).²⁶ According to Marc Frank, the well-informed Reuters correspondent in Havana, the advice of MINAZ officials that the 71 mills affected by the 2002 restructuring be phased out over two to three years, and that the ministry not be burdened with responsibility for non-sugar production on former plantations, was rejected (Reuters, 24 March 2003). Private communications said they were overruled by Castro. In 2005, Castro gave his own recollection of events:

I called the minister and I told him: "Tell me please, how many hectares are ploughed?" The answer: "Eighty thousand." My response was: "Not one hectare more." That wasn't really up to me, but I had no option; you just can't let the country go down the tubes, and in April I was looking at 20,000 caballerías of land being ploughed (Castro Ruz 2005).

Things looked different again in early 2006, after a rise in world sugar prices and the slow start of the harvest, and on 14 February, functionaries were summoned to receive Castro's instructions to take urgent steps to increase sugar production, in view of the good prices and export commitments already made (Varela Pérez 2006b). Perhaps 2007 will show a modest rebound; for 2006, it was too late.

None better than Castro himself, finally, to describe his concept of governance (Castro Ruz 2005): "The central state administration doesn't need to negotiate with any minister, it must issue orders to the ministers."

THOUGHTS ON A CUBAN SUGARCANE AGROINDUSTRY, POST-CASTRO

It is tempting to project scenarios for a Cuban sugarcane agroindustry after the disappearance of the present regime. But nobody knows when that will be, in what circumstances the industry will find itself, and what its own state will be. The more detailed the scenario, the more liable it is to become outdated. A future government may inherit not only a mass of bankrupt sugarcane growers and processors needing to be refinanced and re-equipped in order to carry on, but also insolvent domestic banking institutions sunk under a mountain of unrecoverable loans.²⁷

The potential internal and external outlets for Cuban sugar and other cane-based products cannot be accurately foreseen. In this, the past is no guide. Times have moved on, and Cuba can neither regain its former place in the U.S. and world markets nor match the production costs of Brazil, today's world leader. But even Brazil cannot cover all of the world's sugar and bioethanol needs. There is room for an efficient, suitably dimensioned Cuban industry. The bottom line for that is not some ambitious maximum, but the minimum, i.e., critical mass, essential for sustainability, and at which the goals rhyme with other economic objectives as well as the available resources.

Vitiated by centralization and command-and-control governance, land reform to sweep away the latifundia perversely led to a super-latifundium, and nationalization of dozens of sugar companies to a huge state monopoly, both highly inefficient. As a result, Cuba's sugar industry could neither exploit fully the marketing opportunities on offer under Soviet-bloc special arrangements nor withstand the adversities following their end. Contrary to Castro's Manichaeism, modern sugar industries exhibit an enormous structural variety (Blume 1985:162–286). So the

26. Before Cuban sugar became uncompetitive on the world market, Castro was prepared to "bear one year, two years, three years of low prices" without curtailing production and exports (Castro Ruz 1965). While the oil-sugar price ratio has changed, the rise in oil prices has enhanced the value of sugarcane as an energy crop and, in the first instance, the value of surplus bagasse, the fibrous residue after sugar extraction, for generating electricity in efficient mills.

27. Sulroca Domínguez (2002:105–08) cited MINAZ figures for bank debts totaling 900 million pesos owed by cane UBPCs as of 30 June 2000.

perdurance of traits of the plantation mode of production in Cuba cannot simply be explained as dictated by the physiological properties of sugarcane or as the natural continuation of a historical association of sugarcane with plantation agriculture. The post-revolutionary structures of Cuba's sugar industry arose by choice of the regime and had the prime objective to restrict the private sector and then to cope with the systemic deficiencies in the state agencies created.

Change is inevitable, and one lesson to be learned from the changes seen over almost half a century is the importance of the management of change. This is difficult enough without its politicization, whatever the color. To succeed, it must rely as far as possible on market or quasi-market mechanisms that ensure feedback and accountability. Policymaking must be open, transparent and properly debated, drawing on all available expertise. The management of change in

Cuba has been marred since 1959 by precipitousness alternating with procrastination, and short-termism with long-range plans. Not the most insignificant factor making for a viable sugarcane agroindustry in post-Castro Cuba will be that it is unlikely to be commanded by yet another Duke of York, as immortalized in the nursery rhyme:

The grand old Duke of York,
he had ten thousand men,
he marched 'em up to the top of the hill
and he marched 'em down again.

Or impelled to flow and ebb like an ocean wave, as in *La peña La Mina*, an old Spanish song from Lueca in Asturias, once also popular in Cuba:

Vamos a ver la ola marina,
vamos a ver la vuelta que da,
tiene un motor que camina p'alante,
tiene un motor que camina p'atrás.

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