

groups of principles. The one is associated with non-living processes, the second with living processes, and the third with those involving the action of reason. But there is also a second sort of division of domains of experimental investigation: We can investigate physical principles in terms of their manifestations on the microphysical scale going down to the atomic, and the sub-atomic levels; we can look at them on the scale of our ordinary sense perception; and finally, their manifestations on an astrophysical scale. This combination of three groups of principles, and three distinctions of scale, forms a three-by-three matrix of experimental domains. Looking at the Crab Nebula and some other astrophysical objects from this standpoint, we come to a very fascinating question: To what extent might the anomalous characteristics of these objects constitute manifestations of a universal *principle of life*, operating on the astronomical scale of organization of the Universe? And what about the possible astrophysical manifestations of the principle of human reason? A principle which is always there in the Universe.

This brings us, in a sense, to the astrophysics of the human mind, and to the notion, that the Crab Nebula and other anomalous objects are not really just “out there” many light-years away, but are expressing principles which are operating *everywhere* and at *every time* in the whole Universe, and which are therefore also directly “here” with us.

This inquiry inevitably leads to the necessity of continuing the process that Nicolaus of Cusa laid out, involving both of the abovementioned “double means.” On the one side, we stand at the threshold of new revolutions in the technological infrastructure of astrophysics. So far we’ve remained limited to the Earth and its immediate environment. To really investigate the Crab Nebula and other astrophysical anomalies, we must deploy arrays of such instruments far away from this noisy Sun, away from the noisy Earth. This means mankind must move to more remote regions of the Solar System—beginning with the orbital region of Mars—deploying there successive generations of astronomical instruments, based on new physical principles that we shall discover as we go along.

A first step is to develop the necessary logistical base in space, starting from the setting up of production centers on the Moon and the establishment of cities on Mars—permanent human settlements, that will carry on the task of deploying and servicing networks of astronomical instruments, operating in the region of the Mars orbit and beyond. On the other side, it’s time to liberate science from the prison of empiricism, and to unleash an era of Reason, an era of development of human creative powers unlike anything history has seen.

That gives you a concept of a trajectory for mankind. Mankind needs this kind of conception, which Lyn has given to us, and it’s crucial to the youth movement. To the extent young people today really get serious about taking up the intellectual and moral challenges set forth by Lyn, I am certain, that we shall indeed have that great Renaissance, upon which the survival of human civilization now depends.

Brazil Probes All Causes In Space-Launch Disaster

by EIR Staff

Brazil’s efforts to develop an indigenous rocket-launch capability were set back on Aug. 22, when one of the four engines on the Brazilian-developed VLS rocket being readied for an upcoming launch, ignited unexpectedly, setting off an explosion and fire so intense that it totally destroyed the rocket, the two research satellites which were to be its payload, and the launch pad. The disaster had a far greater cost: Brazil lost one-fifth of its space program team in the fire. Eleven of the country’s most qualified space engineers, and 10 technicians, were killed. Reconstituting a team of that quality will take three to four years, the director of Brazil’s Aerospace Technical Center, Brig. Gen. Tiago Ribeiro, told the leading Brazilian weekly *Istoé* on Sept. 3.

The cause of the engine ignition as the VLS sat on its launch pad at Brazil’s Alcântara Launch Center three days before its scheduled Aug. 25 lift-off, is under investigation. All final pre-launch tests had just been concluded, without a single problem being detected.

The president of the Brazilian Space Agency (AEB), Luíz Bevilacqua, immediately pointed to budget cutbacks as one possible cause. The accident could have been avoided, if the Brazilian government had made greater investments in the space program over the last 15 years, he said. The space program must be treated as a priority. “Space technology is vital for Brazil. Either we master this technology and say Brazil can do this on its own, or we are going to continue to depend on the good will of other countries to obtain data from space, or pay a fortune to those countries which have satellites in orbit.” AEB’s budget for this year—of which only a small percentage has been disbursed—is 35 million reals (around \$12 million), when what is needed is 102 million reals, Bevilacqua said.

Brazil has remained committed to developing an indigenous launch capability, despite two decades of intense international pressure to shut it down, from U.S. and other industrial nations’ utopian policy spokesmen (see “Boosting Ibero-America into Space,” *21st Century Science & Technology*, Spring 2002). An emotional President Lula da Silva emphasized at the Aug. 26 ceremony honoring the dead, that continuing their work “is the way to pay homage to them.” We will continue the mission, “so as to keep alive their memory,” the President said.

Two previous attempts to launch the VLS failed, in 1997 and 1999.



The VLS rocket at the Alcântara site which was destroyed when a rocket exploded on Aug. 25. The VLS is the only indigenous rocket program in Ibero-America, since Argentina's Condor program was terminated under U.S.-led international pressure.

Air Force Looks at Possible Sabotage

The Brazilian government has called the possibility of sabotage remote, but *Istoé* reported that among Air Force officers, sabotage is considered one of the most probable causes of the sudden, unexplained rocket ignition. Military officers investigating the explosion were startled to find that there were an unusual number of foreigners, many of them Americans, checked into the hotels of São Luis, the city where the Alcântara space center is located, at the time of the explosion. At least eight of those foreigners are now under investigation. The investigators are checking, for example, whether any of those visitors in São Luis visited the Vale do Paraíba in São Paulo, where the factories which produce the VLS parts are located.

It is notable that a wishful obituary on the rocket program was immediately published by London's *Financial Times* on Aug. 28, signalling that London intends to use the explosion

as an opportunity to shut down the program altogether. *Financial Times* correspondent Raymond Colitt dismissed the program as "a legacy of the 1964-1985 military dictatorship," and suggested "the fatal explosion forces [a] choice between investing more or calling a halt." London-based investor consultants, Frost and Sullivan, forecast that the accident will "dampen potential demand for any future Brazilian services," reported Colitt with City-of-London satisfaction.

The most plausible hypothesis, should sabotage have been the cause, say *Istoé's* sources, is the application of a foreign agent to the rocket, such as a microwave ray or electromagnetic waves. "An electromagnetic wave could be fired from a small apparatus, or even from space, from some satellite," suggests scientist Edison Bittencourt, a professor at Brazil's Aerospace Technical Center.

Also notable: Six Russian rocket scientists and engineers, specialists in areas including solid fuels, rocket accidents, and others, arrived in Brazil on Sept. 4, to help the South American nation in its investigation of the explosion. Ukraine has also offered technical help in investigating. The Deputy Director General of Ukraine's National Space Agency, Valeriy Komarov, was giving a joint press conference with AEB head Bevilacqua on Aug. 25, when they learned of the explosion. The two space chiefs were reporting on the newly signed accord between their two countries, on Ukraine's use of Alcântara for Ukrainian satellites. Located very near the Equator, it is one of the world's best sites for space launches.

U.S. Access Had Been Denied

In April of this year, the ability of the United States to launch rockets and satellites from the Alcântara base had been foreclosed, after three cabinet ministers (Foreign Minister Celso Amorim, Defense Minister José Viegas, and Science and Technology Minister Roberto Amaral) recommended to President Lula da Silva that the government set aside, and not implement, the U.S.-Brazil Technological Safeguards Agreement negotiated in April 2000. The agreement had been under heavy attack in Brazil's Congress since September 2001, when Congress was informed of its "contempt for national sovereignty." The accord would have prohibited Brazilian personnel from gaining access to areas of the facility during preparations for assembly and launch of U.S. payloads or vehicles; prohibited Brazilian customs officials from inspecting closed containers with U.S. equipment going to Alcântara; and prohibited Brazil from using any of the monies raised from American commercial launches for development of its VLS rocket.