

Basket case science, basket case society

The utter failure of science in Nepal is built into our own system

Udayaraj Khanal

It is quite obvious that there is not any significant development in science in Nepal. Many people maintain that the government and politicians are fully or mainly responsible for this quandary, as for every other. But the author digs deeper to discover the underlying causes. He argues that the scientific failure happened 'through' the politicians, not 'by' them.

The ability to learn from mistakes is the most important prerequisite for success. To illustrate this point, I would like to describe an incident involving Thomas Edison, who had tested more than a thousand materials for the filament of his light bulb. A gentleman approached him and said, "Mr Edison, you have failed a thousand times." Edison replied, "I have not failed a thousand times, but discovered a thousand things that do not work." The point is well-taken. However, if one does not learn from experience but repeats mistakes indefinitely, then we can fairly speak of failure. Some mistakes at the beginning of a career may be forgivable, as long as the novice learns from them. But, as the novice advances up the hierarchy to executive status, it is to be expected that experience will result in a reduction of the incidence of error, because mistakes at a higher level become more costly, and a single wrong decision by the chief executive may suffice to pull down the whole institution.

Past and present

Hence, we expect that people who take over the leadership should be those who have exhibited an aptitude for learning from mistakes. This is indeed the foundation of the scientific culture of a society. In my opinion, this basic trait, lacking in Nepalese society, is preventing us from achieving our developmental goals. The leadership that we are burdened with, be it political, social, cultural, scientific, adamantly refuses to learn from past mistakes. The political leaders tell us we should not delve into their past history of rampant corruption and misgovernance, killing and browbeating the downtrodden Nepalese into submission, and follow them blindly as they attempt to make a fresh start. Thus we are prevented from taking any forward step, but make a full circle back to square one, and are effectively pegged to the same spot. Our social leaders, instead of

leading us forward to new horizons, encourage us to look backwards and preserve our archaic traditions, even if they entail inhumane behaviour such as the treatment meted out to women accused of witchcraft, castism, drinking fresh blood from necks of struggling sacrificial animals, and what not, so that we remain preoccupied with superstition.

In contrast to dictatorship, multi-party systems have succeeded around the world because competition to develop better policies entails the incorporation of lessons learned from past mistakes. In countries where this system has been implemented successfully, if the incumbent who leads the party into an election is unable to secure a majority, he resigns so that a younger person comes out with new and better ideas to make the party popular by the time of the next election. In countries like ours, we are always saddled with the same failed leadership. Even if they are taking us down the drain, we are forced to consider them our leaders. Now they blame all their misdeeds on the constitution. If intentions are good, then the constitution cannot be a hurdle. After the Second World War, the victorious powers forced a constitution on Japan, which they hoped would prevent Japan from competing with them in any sphere. Japan established itself as the second power with that same constitution, which is still in use.

A bigger hurdle on our path to development is the failure of our academic leadership. If the academia had been true to its profession, gathering and giving appropriate advice to the politicians, I think the situation would have improved greatly. In the rest of the world, the university always appears to be anti-establishment as it voices strong, rational, and convincing criticism of the policies of those in power, and suggests improvements. In the USA, for example, Robert Oppenheimer, who played a leading role in developing the nuclear arsenal, was

hounded to death for allegedly being a communist; much later, as Nixon was escalating the war in Vietnam, all the universities were branded as a haven for communists because they opposed this warmongering. Similarly, during the Soviet regime, a person like Sakharov, who was the father of their nuclear weapons programme, was labelled a capitalist agent and sent into internal exile. So it is clear that the academics have the important role in directing the establishment towards rational and liberal thinking. But the story is completely different in our country. The whole academia plays to the fiddle of whoever is in power. If the government revalues the rupee, it is hailed as a great step towards showing the strength of our currency. When the rupee cannot hold its own and is devalued a few weeks later, then the same people hail it as a great step towards revitalizing the economy. With such poor advice and toadyism, they hope to become recruited by the minister as personal assistants, if not as advisors. Thus, the gullible so-called political leaders are continually misguided by those who call themselves the academic leaders, but do not have an iota of academic insight, initiative or achievement to their credit. The general mass has no faith in them. So they hide in their academic offices and proclaim amongst themselves, "We the intellectuals, academics, wisemen ..."

Nepalese academics bear sole responsibility for the destruction of our educational system. The New Education Plan was conceived by politicians as a means of controlling education because they thought their grip on power would loosen if the mass became highly educated. The academic circle co-operated whole-heartedly in this conspiracy. Many schools that were doing very well were brought down to the level of the worst. All the well-tried textbooks were thrown away in the name of uniformity, and replaced with books containing gross conceptual and printing errors, with inadequate graded exercises, written by irresponsible educators. Many of these books are still in circulation, and many that have been translated into English for the consumption of boarding schools contain even more errors. One popular science book for sixth grade classifies spinach as a grass, and potatoes and carrots as cereals. Appointments, and even transfers, of school teachers, as well as

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The scientific leadership of Nepal has a very unsuccessful history. The NCST never established and formulated any far-reaching policy. Rather, it opted for the idea that research should not be undertaken in educational institutions, despite the fact that academic departments are the major research venues all over the world. Then appeared RONAST, which is vegetating without any clear purpose and without any remarkable activity. It is quite ironic that the institution established to promote scientific development proclaimed in its first publication that research should not be undertaken by a poor country like Nepal, despite the fact that the North–South developmental gap is essentially a scientific gap. The tireless so-called scientific executive then established the Ministry of Science and Technology – which will have a tough time to prove its worthiness!

the conduct of exams, are steeped in corruption. The best results of the final secondary exams are auctioned off to the highest bidder. Then, instead of encouraging the brightest students, the publication of the “toppers list” is discontinued with the lame excuse that it fosters unhealthy competition. A party in power first stopped this publication. Another party that came to power after a few months, undid the decision just because it had to do things differently, only to redo it later on. Now, such corrupt practices are being extended to the lower level district exams. Just as the whole village gathers in front of SLC exam centre to pass cheating material to the examinees, and the invigilators are reported to suggest many of the answers, we hear of similar incidents repeating in the lower level district exams. When school children are taught from the beginning that only such cheating and fraudulent practices can bring success in Nepal, what kind of leadership can we expect from them in the future? A similar disease was transmitted to the university level. Many private colleges like Amrit Science College, which were doing very well, were forcibly reduced to the lowest standards. Wherever the new education vandals thought that science should not be taught, they went around with sledgehammers to destroy even the newly setup labs as they did in Shankar Dev Campus.

The scientific leadership said that science cannot be done in a country with no science policy, and forced the establishment of a National Council for Science and Technology (NCST) in 1976 AD, which they captured without much resistance. No concrete, far reaching policy was ever formulated or implemented. Turning a blind eye to the fact that the academic department is the prime spot where research is done all over the world, that research is an integral part of university education, these so-called scientists said that research should not be done in the department, but only in the privileged centre where all funds were diverted, leaving the departments with just

chalk and duster. Now these departments are so deprived that they cannot even buy chalk. In the hands of the same chronically failing scientists, the centre also never conducted any worthwhile research, but wasted itself on pursuing mirages like perpetual machines. Then these same people said that scientific activity was impossible in a country that was devoid of a science academy, thus instigating the establishment of the Royal Nepal Academy of Science and Technology (RONAST) in 1982, which was also taken over by the same clique. Unfortunately, the first ever publication of this institute proclaimed that scientific research should not be undertaken by a poor country like Nepal, in complete contrast with the fact (and, of course, the idea of the Nobel Laureate physicist late Abdus Salam) that the North–South developmental gap was essentially the gap in science. More than a decade was wasted in a feud between RONAST and NCST as to who should be responsible for formulating a national science policy. The quarrel took a destructive turn when NCST was dissolved. In the meanwhile, RONAST had gone through a series of downturns, from gold smuggling, to strikes and lock-outs, to defilement of its own VC, and on and on. Has anyone heard of a science academy going on strike? It is still not clear what the purpose of RONAST is.

When Salam visited Nepal in 1989, in the presence of the late King Birendra, he offered to establish an international high technology centre in Nepal. His Majesty took the offer seriously, and a committee was set up to facilitate the establishment. The Education Minister was sent off to meet Salam and work out the details. Sadly, the same leadership that had been misguiding the development of science in Nepal managed to take over the committee. They feared that their stranglehold on the scientific activity of the country would loosen if such an international centre were set up. Leading scientists of the world would come over to train and collaborate with the young Nepali scientists who would soon overtake the old calcified ones. So Salam's offer was rejected.

If the offer had been accepted, Nepal would by now have leapt ahead in information technology, genetics, and emerging fields.

Again, the same scientific leadership that had proved a failure throughout, and had exhibited a penchant for recycling old mistakes, convinced the government that Nepal could not do any science until a Ministry of Science was established. A few years ago, this Ministry came out with a draft bill to purportedly develop science. It contained clauses to the effect that anyone contacting foreign scientists without prior approval, or found to be doing unauthorized science, would be punished severely with fines and incarceration. The bill was dropped after a hue and cry was raised at the university, but the intention of the Ministry to control scientific activity rather than encourage it is obvious. This also came to be dominated by the same scientists, and again a feud has developed between RONAST and the Ministry. Every now and then there are threats that the Science Ministry will be dissolved in the near future. So, there is no ground to blame political leaders for the sorry state of science in Nepal. They have invariably taken up the suggestions of the scientists. The whole blame lies with the scientific leadership that holds almost absolute power but has failed in every aspect, whether it be implementation of an effective scientific programme, inspiring the youth with scientific achievements, encouraging the youth to initiate scientific activities, or utilizing and developing national resources.

Future outlook

It appears that the leader of each and every institution in Nepal is bent on destroying the structure. If the institution becomes strong, the leaders will have to behave responsibly, and tough questions will be raised regarding their decisions. Without any institutionalisation, the leader can run it as a fiefdom, where the lower ranks will go down on their knees in front of the leader, and then bite him in the back. It remains only for the youth to remedy this bleak situation. It is high time that they express themselves fearlessly and break new paths. They should refuse to be used as weapons of the ossified old generation, whose method of retaining power has been to keep the youth misinformed and misguided, and the people terrorised and fighting amongst themselves for meagre benefits and even for subsistence.

Perhaps our youth should learn a useful lesson from the youth of South Korea. They successfully forced out the military dictatorship and initiated democratisation. But they did not do this at the cost of their own future. Along with their political struggle, they worked hard in colleges, acquiring all the requisite scientific and technological expertise that is now second to

none, to lead their country through development. These same youth lead their country in world-class sports. Three decades ago, Nepal and S. Korea were at the same stage of development; now the gap has become almost unbridgeable. Our youth has been deceived into believing that there is nothing but politics, and the only politics they understand is destruction. They do not realize that they are striking their own legs with the axe. In history books, we read of marauding foreign armies burning down libraries and other cultural icons of the vanquished. But here, the youth is gleefully torching the departments and libraries, destroying computers and other possessions of the university that were imported at great cost with hard earned foreign exchange, without an inkling that they are cutting their own throats. For some reason, all the political factions have been considering the education sector as the greatest threat to absolute power. Hence, all of them have targeted educational institutions for their political vendettas. Teachers and students are used as mere tools for political gains. The destructive events of the recent past indicate that, finding itself unable to adapt to the new world scenario, the Nepalese society is developing a death wish with suicidal tendencies. Unless the youth can break free from the stranglehold of the senile political and other leadership, the whole society will continue to be

The utter failure of science in Nepal is attributable more to the academic leadership than to politicians. The so-called academic leaders share three features: illogicality, because they lack a scientific approach; no vision of the future because they lack insight and knowledge of science and society; and (therefore) toadyism towards politicians because they want to keep their grip on power. These pseudo-leaders gave poor advice and convinced the politicians to arrange whatever was beneficial and comfortable for them. This all resulted in the present state of education and science, and to the rejection of Abdus Salam's offer to establish an international high technology centre in Nepal. There is no ground to blame the politicians for this plight because they have taken up the suggestions of scientists. It appears that the only remaining hope for improvement is the energetic and intelligent youth.

taken down the path to extinction.

So it has become very important that the Nepalese youth forge a new path that will extricate them from this vicious vortex. They should openly and incisively question the intentions, methods and achievements of our so-called leaders who have had many opportunities, but repeated the same mistakes, and failed at every turn. The youth should come out with new ground-breaking ideas to develop our country. They should not compromise in acquiring the necessary expertise. Amartya Sen was awarded the Nobel Prize for proving that poverty, deprivation and famines are results of political manipulation rather than lim-

ited resources. Manpower resource is all that is necessary for development. Indeed, if they are serious, our youth will have to work overtime to constructively lead the society as well. Otherwise, as we remain mired in feudalistic darkness and poverty, it will remain inconsequential to us whether Professor Zewail earned his Nobel Prize for the study of chemical bonding using millisecond or femtosecond spectroscopy. ■

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Reasoning for results

A huge collection of data is nothing if we cannot make a hypothesis. Thinking over the result is as important as getting the data*

Dennis Bray

If biology were just a matter of gathering data about a fixed reality, there would probably be no need for theory in biology. But, basically it is a new idea that makes some significance to the society. Now, more than ever, we need to acknowledge the need for what Bush Père referred to as "the vision thing." We're not just talking about discoveries, new techniques, and Big Ideas – all of which require thought, and often hypothesis. Now we are entering a new phase in biology, where computer modeling can create virtual realities – and even predict and shape real reality. It's a brave new world, and without theorists to reflect on where it's all going, it could get scary.*

Let's start on safe ground. We all agree, surely, that theory — the formulation of hypotheses — is important in biology. Techniques are essential, as is the careful collection of quantitative data. But without ideas to give them shape and meaning, those endless successions of base sequences, ex-

pression profiles, electrical recordings and confocal images are as featureless as a plate of tofu. All really big discoveries are the result of thought, in biology as in any other discipline. Allostery, genes, DNA structure, chemiosmosis, immunological memory, ion channels were all once just a twinkle in someone's eye. And the work of most contempo-

rary research laboratories still takes place within a framework of hypothesis, although practitioners may not always recognize this fact. As Charles Darwin once remarked: "How odd it is that anyone should not see that all observation should be for or against some view if it is to be of any service."

But assuming that biological theory ►