Miklos Gyulassy: From Dreams to Reality*

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Abstract

Miklos Gyulassy has done many seminal works on the theory of high energy density matter and how it might be produced in heavy ion collisions. In this talk on the occasion of his 60th birthday, I'll describe some of those accomplishments in physics and some of his family history, and will offer as well a number of personal recollections.

1 Introduction

I begin the talk by showing Miklos as a baby in his mother's arms, Fig. 1a, and later as a young boy of about 2-3 years old, Fig. 1b. The next photo shows Miklos as an adult with his mom, Marianne Rednik, and dad, Gyula Gyulassy, Fig. 2. There is much change, since as Miklos knows full well, the decades pass too quickly. I think in all of these pictures, you see the intrinsic good sprit and decency that characterize Miklos, making him such a valued friend and colleague. For these traits and values, we must applaud his parents.

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Figure 1: (a) Miklos as a baby. (b) Miklos as a boy of about 2-3 years old.

Figure 2: (a) Miklos with mom and dad.

2 Childhood

I asked Miklos to provide me some early family history, and he wrote:

"My mother Marianne Rednik was born in 1924 in Transylvania. She is now retired in Budapest. My father Gyula Gyulassy was one of the last cavalry officers in WWII, fighting with sword on horseback in Russia. He bred horses until he retired at 70. He died in 2002. He and my mother married in 1948 and soon divorced in 1952. He remarried and I have a half brother Akos (1958) and one living sister, Adrienne, (1953) who remained in Hungary with families. A half sister Lily died in 2002."

In the picture below, Fig. 3(a), Miklos is dressed in tradtional costume at age 4. There is also a picture of his father and siblings, Fig. 3(b).

Figure 3: (a) Miklos in traditional costume at age 4.. (b) Miklos with Adrienne, Lily, Akos and Papa in 1983

Miklos was born shortly after the Second World War. This was a very tragic time in Hungarian history. Prior to World War I, Hungary had been a major world power – one of the leaders of the Austro-Hungarian Empire. After World War I, it fell into political and economic chaos. There were large oscillations between the right and the left. At the time, these ideologies had great structural and philosophical similarities, yet they hated one another with the deepest passion. Both were quite willing to sacrifice human life on a colossal scale – for ideological goals inspired by the crazed dreams of hate filled demagogues, or for abstract principals that are now long since forgotten.

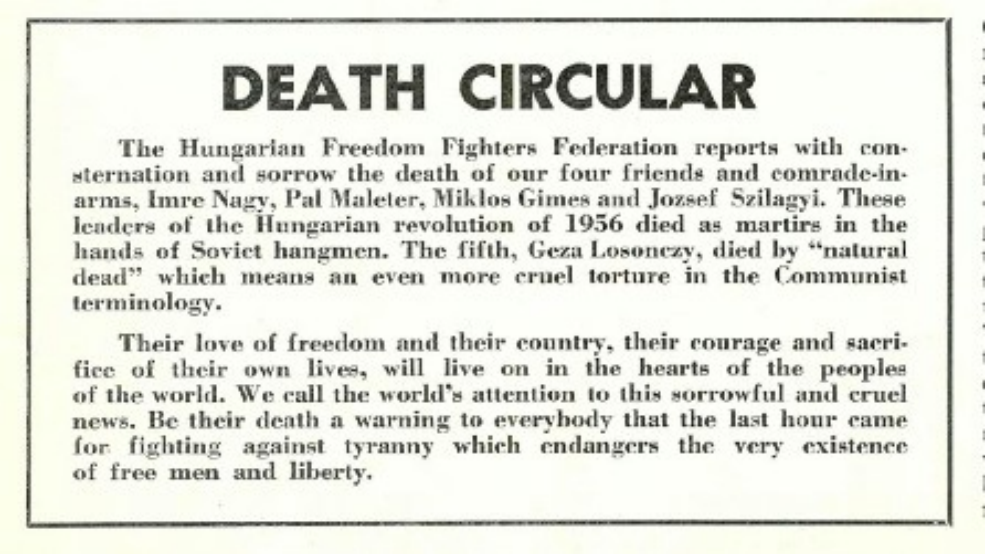
There were many reasonable people of course, but these were overrun by those unscrupulous and aggressive enough to seize power and liquidate their enemies. As World War II began, Hungary fought on the side of Germany. As the war ended, it was occupied and controlled by the Russians.

The immense human suffering of the Second World War is impossible for those of our generation to understand. The scale of murder on battlefields, and the death and torture in the camps of Hitler and Stalin are things that we can read about and hope will never happen again. But we cannot feel the impact of such realities directly, nor understand how profoundly they affected the way people thought and acted.

In 1956, an internal power struggle within the Communist Party in Hungary had evolved into full-scale rebellion against Russia and the legacy of Stalin. Khruschev had recently become Party Secretary in the USSR, and the rebellion in Hungary, threatened to result in a return to power of Stalinists in Russia. The revolution in Hungary became a desperate and ultimately tragic struggle for freedom. The picture below shows a head of Stalin decapitated from a statue somewhere in Budapest, Fig. 4. The death circular was distributed by the Hungarian Freedom Fighter Federation, Fig. 5. The struggle ended, of course, with the inevitable invasion of Hungary by Russian tanks, while the West stood by helplessly.

Figure 4: Stalin decapitated.

Miklos remembers:
"My mother and I escaped Hungary through machine gun patrolled



DEATH CIRCULAR

The Hungarian Freedom Fighters Federation reports with consternation and sorrow the death of our four friends and comrade-in-arms, Imre Nagy, Pal Maleter, Miklos Gimes and Jozsef Szilagyi. These leaders of the Hungarian revolution of 1956 died as martirs in the hands of Soviet hangmen. The fifth, Geza Losonczy, died by "natural dead" which means an even more cruel torture in the Communist terminology.

Their love of freedom and their country, their courage and sacrifice of their own lives, will live on in the hearts of the peoples of the world. We call the world's attention to this sorrowful and cruel news. Be their death a warning to everybody that the last hour came for fighting against tyranny which endangers the very existence of free men and liberty.

Figure 5: A death circular of the Hungarian revolution.

borders and emigrated to the U.S. during the 1956 revolution. She risked all because I at 6 years old and each member of my family was labeled by association as a **Public Enemy**.[1] *The stamp in my identity card would have precluded me from studying at any Hungarian university in the future.*

Anyone related to former officers who served in WWII or was related to long dead ancestors belonging to the 19'th century nobility were branded **Public Enemy**. *I had both strikes against me at age zero. My first grade report card had the dreaded X branded into it, notifying teachers and administrators that I was an enemy.*

I would have had to work in a factory the rest of my life or convert to a communist if my mother had not been brave enough to escape that ruthless tyranny "

Two hundred thousand refugees escaped the Soviet invasion and were held in refugee camps in Austria. Nixon visited Austria and through his efforts, the US accepted 80,000 refugees. Many other countries, particularly Canada, also accepted refugees. This effort was perhaps motivated by a memory of Bleiberg Field on the Austrian-

[1] I have taken a little liberty with the more precise translation from Hungarian of "Public Enemy" as "Public Alien".

Slovenian border. In 1945, there were 200,000 Croatian refugees escaping Serbian partisans. Two thirds were civilian or children. The West forcibly repatriated them to Tito. All were tortured. 50,000 to 70,000 were murdered.

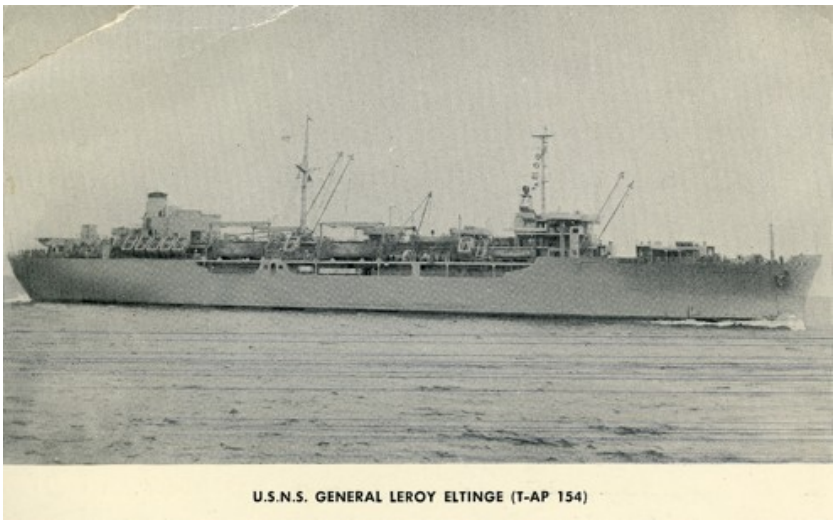


Figure 6: The ship that took Miklos and mother to the USA.

Miklos has strong praise for Richard Nixon, who is credited with the efforts to prevent the forcible repatriation of Hungarian refugees to an uncertain and perhaps short future in Hungary. Richard Nixon has throughout my life been the boogey man of left-wing intellectuals and academics. He is person about whom many of us have mixed feelings at best. His presidency started with a Vietnam war inerited from Kennedy and expanded by Johnson, and Nixon is oftentimes blamed for the war because he did not end it fast enough. He was also a person with a damaged relationship with honesty and an inability to admit mistakes, not unlike many modern politicians. He was also a bigot on issues of race and ethnicity, as were too many of his generation. However, he opened the doors to a relationship with China, and he ended the Vietnam War. A photo of a meeting of Nixon and Khruschev is shown in Fig. 7.

Miklos recalls:

"My entire education, career thus far in freedom from tyranny (both fascist and communist) was made possible by the heroic work

Figure 7: Richard Nixon meets Khruschev.

of Richard Nixon who urged Eisenhower to accept 80,000 Hungarian refugees. He remains my and my mother's greatest hero, notwithstanding his well known many other shortcomings."

One of the amazing things about youth is how quickly it can adapt to a new and different life. Below you see photos of Miklos as a young boy in the United States, Fig. 8. Miklos surely did the things young men of that time did. I assume he was very good in school, since he was admitted to U. C. Berkeley in 1966, and to the UC Berkeley Graduate School in Physics in 1970. In 1974 he received his PhD, and from there went to do postdoctoral study in Walter Greiner's group at the University of Frankfurt. Photos of Miklos as a student and postdoc are shown in Fig. 9 For his PhD, he worked with both E. Wichmann and V. Swiatecki, shown in Fig. 10.

3 Early Academic Accomplishments

The thesis work of Miklos was about vacuum polarization in strong Coulomb fields. [1],[2],[3] Such fields exist around highly charged nuclei. Because a muon has a large mass, the radii of its orbits are typically much smaller than those of the electron cloud. By choosing to look at excited but not highly excited muonic states one can probe the Coulomb field of the nucleus largely undisturbed by either the electron cloud or the complications of nuclear structure. Such an

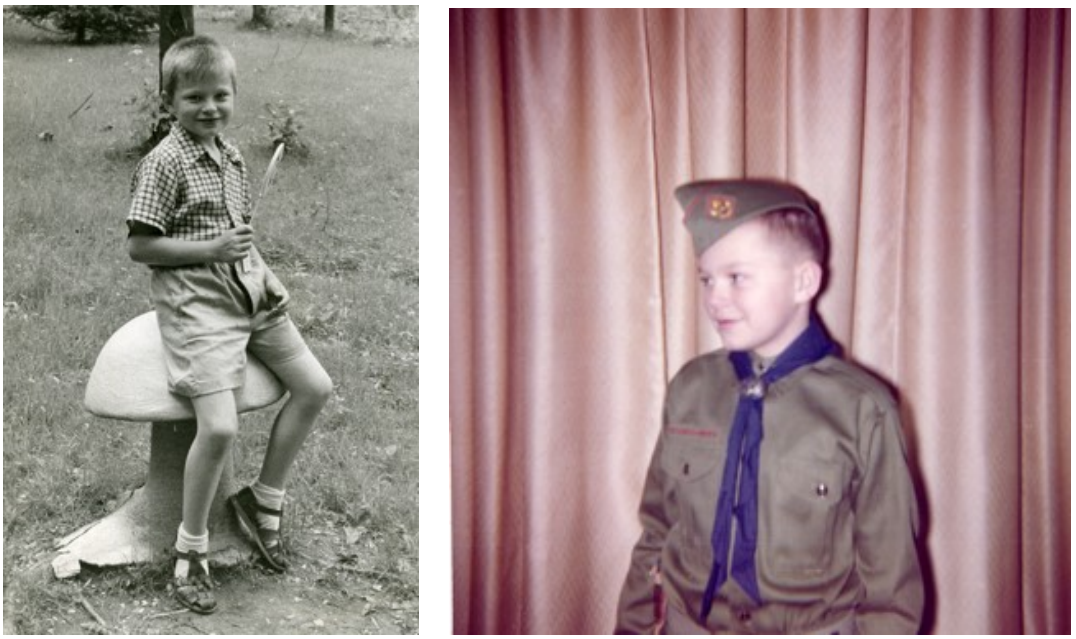


Figure 8: (a) Miklos sitting on a toadstool in 1958. (b) Miklos as a Boy Scout.

Figure 9: (a) Miklos as a graduate student at Berkeley in 1974. (b) Miklos as a postdoc in Frankfurt during 1974-1976.

atom is shown in Fig. 11 a.

At the time Miklos was working on his thesis, there was a discrep-

Figure 10: (a) Vlad Swiatecki. (b) E. Wichmann.

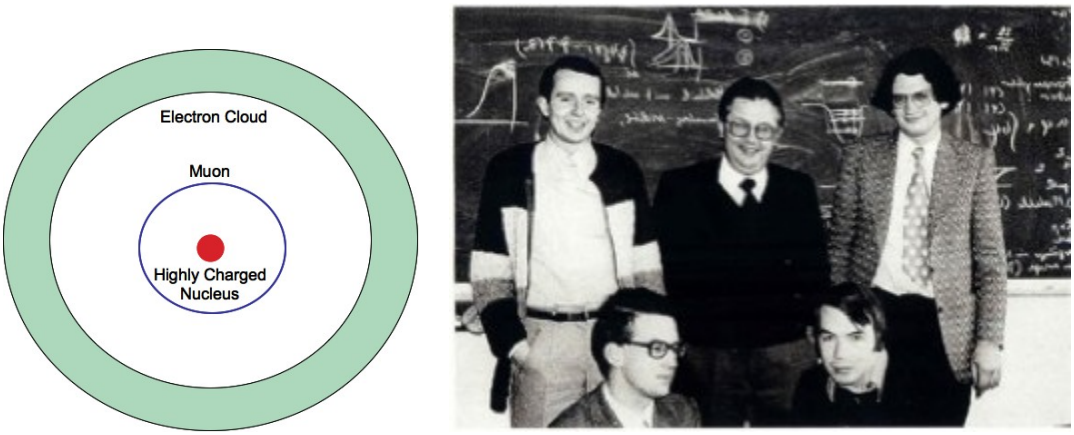


Figure 11: (a) An illustration of a muonic atom. (b) Berndt Muller, Walter Greiner, Johann Rafelski and Gerhardt Soff in the mid-seventies .

ancy between the computed and observed values of the energy levels of muonic atoms. It was thought that this discrepancy might signal a breakdown of Quantum Electrodynamics in strong background fields. The classic computation of the modification of these fields due to quantum fluctuations had been done years before by Miklos' thesis advisor, E. Wichmann.[4] Miklos wanted to verify this result, and include the effects of the charge radius of the nucleus by numerically

computing the vacuum polarization induced by the strong fields. He did this and verified that the corrections he found were too small to affect the discrepancy. The discrepancy subsequently disappeared; the early experiments were found to be incorrect.

I came to know Miklos through his thesis project. As it turned out, I was doing the same computation independently as a graduate student at the University of Washington in Seattle.[5], [6]. Miklos did a numerical computation and I, Lowell Brown and Bob Cahn did an analytic computation. Our results agreed.

As a consequence of this thesis project, Miklos became interested in the problem of Quantum Electrodynamics in strong fields. Walter Greiner was the world's leading expert on such problems, and had developed seminal ideas concerning the instability of the vacuum in the presence of strong fields. This process is, in electroweak theory, similar to anomalous processes that may generate the baryon asymmetry of the universe, and in strong interactions, ones that may be responsible for generating the mass of the neutron and proton. This instability of the vacuum in strong Coulomb fields is due to the binding energy of an electron becoming larger than twice the electron mass. In this case, the state of a nucleus with no electron is unstable and decays into a state with an electron and a low energy positron. These ideas had been developed with two young students of Walter, Berndt Muller and Johan Rafelski, shown in Fig. 11.[7],[8],[9],[10]

When Miklos and I first met face to face, he had just finished his thesis and accepted a postdoctoral position in Frankfurt; he was excited to go off and work with Walter and his group. At that time, Walter was interested in testing the ideas about the instability in strong Coulomb fields. He proposed colliding highly charged heavy ions so that in the collisions there would be a short lived but very strong Coulomb field produced. Such a field would spontaneously emit positrons – that is, "the vacuum would spark". I believe it was this problem that initiated Miklos' involvement in heavy ion research.

After his time in Frankfurt, Miklos returned in 1976 to LBL. He was a postdoctoral fellow from 1976-1978, a divisional fellow from 1978-1981 and a senior fellow from 1981-1992. In 1992, he joined the faculty of Columbia University. IFig 12a shows a photo of Miklos at the blackboard in LBL around 1979. At that time I was visiting Miklos trying to learn the theory of heavy ion collisions. I had been talking with Bjorken, and had become excited about the prospects

Figure 12: (a) Miklos at the blackboard in 1979 in LBL (b) Miklos in a panel discussion for the Quark Matter Meeting held in LBL in 1983. From left to right: J. Bjorken, M. Gyulassy, A. Bormley, R. Stock, and A. Schwrzchild.

of using ultra-relativistic nuclei to make what is now known as the Quark Gluon Plasma. I remembered Miklos was at LBL and found he understood these ideas, so I began to go up every couple of weeks from SLAC, where I was then a postdoc, to learn from Miklos. Miklos was excited at that time about the possibility of making a high energy heavy ion accelerator at LBL, VENUS. As is the case now, Miklos at that time was very enthusiastic, but also was very careful to combine his enthusiasm with well thought out skepticism.

Later, after the cancellation of the Isabel project, a possibility developed to build what has become the RHIC heavy ion accelerator at Brookhaven National Laboratory. The transition from a high energy physics project to a nuclear physics project was a difficult one, and was skillfully negotiated by Nick Samios. One of the first things Nick did was to bring the Quark Matter meeting to Brookhaven National Laboratory so that the scientists there could develop an understanding of the physics involved. A photo of Miklos during a panel discussion held at Brookhaven National Lab. during the Quark Matter Meeting in 1983 in shown in Fig. 12b.

We were both invited to participate in the Long Range Planning Meeting for the Nuclear Physics held in 1983, as part of a group headed by Gordon Baym. We were very young at that time, and surprised to be included in this gathering of distinguished scientists. It was at this planning meeting that RHIC was adopted as the highest priority for new construction in the US Nuclear physics program.

Shoji Nagamaya was an experimentist working at LBL during the late 70's and early 80's. Miklos developed a good friendship with him.

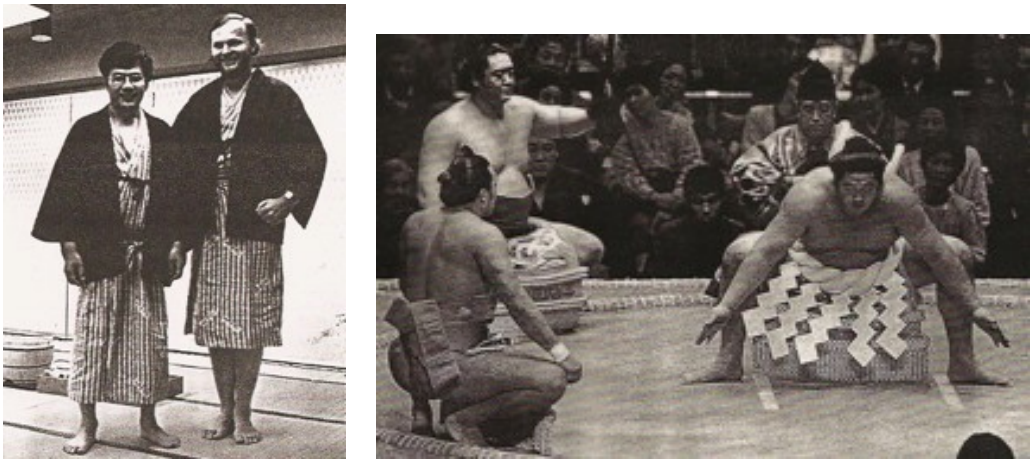


Figure 13: (a) Miklos and Shoji Nagamaya during a visit to Japan. (b) Japanse sumo wrestlers.

A picture of Miklos and Shoji during a visit to Japan is shown in Fig. 13a. Miklos developed an appreciation for Japanese culture through Shoji, and his love of Sumo wrestling, Fig. 13b. Both Miklos and Shoji were recruited to Columbia University by T. D. Lee. Shoji became the central architect of the Phenix experiment at RHIC.

4 Miklos and Gyorgyi

Miklos married in 1978. In the first picture below is Miklos with Gyrogyi in a field of flowers in the coastal range north of San Francisco, Fig. 14a. At Miklos's 60th birthday celebration, we hiked to a view near there. Miklos as a married man has today the same smile of happiness that you see in his wedding picture, Fig. 14b. Miklos and Gyorgy have a very strong relationship, cemented together by the children they have raised: Attila, Laszlo and Katalin, Fig. 15.

I asked Gyorgyi to describe a memorable anecdote during her marriage. It turns out that she keeps a diary in the form of illustations. She sent me Fig. 16, that she explains is related to an extended visit to CERN:

"These are cartoons where the two little creatures are arguing. That's Miklos and me. He wanted 2 kids and I wanted 3. The argument was decided after a grave illness, when he opted for life and


Figure 14: (a) Miklos and Gyrogyi in a field of flowers about 1978. (b) Miklos and Gyorgyi getting married in 1978.

Figure 15: Attila, Katalin, Miklos, Gyorgyi, Laszlo and family dog, Matyi and 2009

he himself decided he wanted three children. So he won the argument. That's how we have a wonderful Kati, now turning 21 and a joy."

Miklos has an extended family in Frankfurt: Walter Greiner, who

Figure 16: An illustration from Gyorgyi's family chronicle.

was long time head of the Institute for Theoretical Physics in Frankfurt, shown in Fig. 17a, Horst Stocker and his wife Ota, and others. Walter is a most personable and warm human being, and the atmosphere he sets in his group is one that combines accomplishment in physics with loyalty and human understanding. One of Walter's prodigies is Horst Stocker. Horst is now the director of GSI, the premier German nuclear physics laboratory. Horst has been a friend of Miklos since the latter was a student. Miklos, Gyorgyi, Horst Stocker and Ota are shown picking cherries when Horst was a postdoctoral fellow at Berkeley, Fig. 17b.

Figure 17: (a) Walter Greiner. (b) The Gyulassy and the Stocker families picking cherries.

5 Awards and Major Scientific Accomplishments

Miklos was awarded the Alexander von Humboldt Senior Scientist Award in 1986, an award that facilitated his visits to Walter Greiner's group in Frankfurt. The physics of ultra-relativistic heavy ion collisions was increasingly the focus of both Miklos and his colleagues in Frankfurt. In 1987, Miklos won the Lawrence award of the Department of Energy for his research work on hydrodynamics and flow and on pion interferometry, Fig. 18.

The work Miklos did on the theory of flow has had major impact on the experimental program done with ultra-relativisitc heavy ion collisions at the RHIC accelerator.[11] The results of his calculations, combined with experimental measurement, have proven to be a measure of the equation of state of matter produced in such collisions, and have provided strong evidence that the matter is thermalized in such collisions.[12] His early seminal work in this area is at the heart of the "Strongly Interacting Quark Gluon Plasma" paradigm.

Miklos applied the ideas of photon intensity iterferometry (Hanbury-Brown-Twiss Interferometry) to pions in heavy ion collisions.[13],[14]

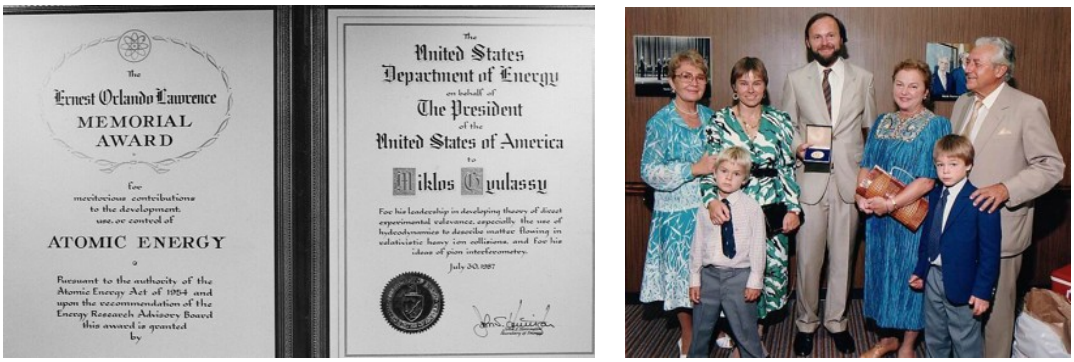


Figure 18: (a) The Erenst Orlando Lawrence Award . (b) Miklos and family after receiving the award .

For photons, intensity interferometry is used to measure the sizes of nearby stars. In heavy ion collisions, it is used to extract information about the sizes and lifetimes of the volumes of hot and dense matter produced in high energy collisions.

Miklos's most famous work concerns the damping of the energy of very high energy particles produced in ultra-relativistic collisions. Such high energy particles produce sprays of particles that are aligned, and hence are called jets. Since the theme of this talk concerns the realizations of the dreams of theoretical nuclear physicists in observations made in controlled experiments, it seems appropriate to quote Miguel Cervantes:

When life seems lunatic, who knows where madness lies? Perhaps to be too practical may be madness. To surrender dreams, this may be madness. To seek treasures where there is only trash... Too much sanity may be madness, and maddest of all is to see life as it is, and not as it should be.

I begin with two posters, the first is in French, Fig. 19a. I have been in France for the last 4 months, and colleagues there tell me the caption is "I Love Jets". The second is consistent with the Cervantes quote, Fig. 19b. It is a flyer for a movie, described as a "Rock n Roll JET-Movie" full of "Trash and Chaos" It also introduces the "Great Psycho of Them All." Perhaps one of Miklos's collaborators, but although I tried very hard, I could not figure out whether it was Ivan Vitev, Xin Nian Wang or Peter Levai. It also features"Thrill,

Speed and Stupid Zombies". The Zombies must be the skeptics?

Figure 19: (a) I Love Jets. (b) A Rock n Roll Jet Movie featuring thrill, speed and stupid zombies.

Miklos began his work on jets trying to extend some original ideas of Bjorken,[15] and some later work by David Appel.[16]. Miklos's contribution includes the computation of jet energy loss.[17] To understand whether or not such effects might be observable, and clarify the general implication for heavy ion collisions of jet production, Miklos and Xin Nian Wang, pictured in Fig. 20 a, developed their famous Hijing Monte Carlo simulator.[18],[19] Miklos went further to develop a formalism that allows for the systematic study of jet energy loss with Xin Nian Wang, and with Peter Levai and Ivan Vitev.[20],[21],[22],[23]

Jet energy loss was subsequently discovered in the Phenix and the Star experiments at RHIC.[24],[25] The magnitude of the effect was much larger than expected, and a comprehensive first principles understanding of the jet results and results for flow remains a challenging

problem.

Figure 20: (a) Xin Nian Wang and Miklos. (b) Ivan Vitev and Peter Levai.

Before proceeding to a description of Miklos's most recent research accomplishments, I should point out that Miklos and I recently co-authored a paper concerning our take on the Quark Gluon Plasma and the Color Glass Condensate.[26] In fact Miklos and I both have a deep understanding of one anothers work, summarized in Miklos's famous slide he gave at the Quark Matter in Berkeley where the Lady (the Quark Gluon Plasma) looks admiringly on the Unicorn (the Color Glass Condensate), Fig. 21 a. I think Miklos was a little confused during his talk and somehow got the labels reversed, but they are corrected here. This is an illustration made of a beautiful tapestry which hangs in the Cluny Muesum (now the Museum of the Middle Ages) near the St. Michelle metro station in Paris.

In fact Miklos and I are very very close friends. You can judge this by a recent photo, Fig. 21 b. I think we could have been closer friends, in fact could have had a *long term relationship of mutual respect and understanding* had not Miklos had such a wicked and cruel sense of humor.

You can see what kind of things Miklos thinks is funny in the illustrations Fig. 22 a-b. Dima, shown holding the large wrench, was trying to improve the theory of the Color Glass Condensate, illustrated as the train heading full speed ahead towards the CERN LHC. Next Miklos shows a famous train wreck where the train did not stop at the station. Dima is shown happy that he made the train go so fast. I am supposedly the conductor, drinking a beer. (It was only one beer!)

Well, I have learned my lesson, in the words of Miguel Cervantes:

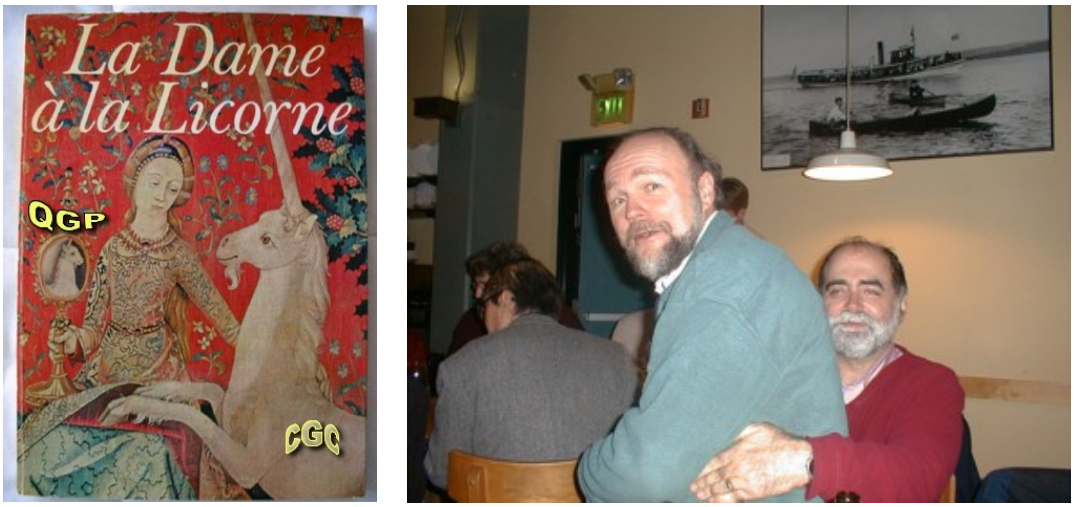


Figure 21: (a) The Lady and the Unicorn . (b) Miklos and me

Figure 22: (a) Dima trying to help the Color Glass Condensate. (b) The result of over-enthusiasm.

Those who will play with cats, must expect to be scratched.

Miklos has been up to no good in recent years. At the 60'th birthday of Edward Shruyak, he showed the slide below, comparing me, himself, Jean-Paul Blaizot and Edward Shuryak to weight lifters, Fig. 23a. We are all turning 60 this year. Gerry Brown is in the background, amused at our efforts. He also had a slide of Barbara Jacak

that I promised I would not show, and Barbara is nowhere even close to 60. Being a gentleman, I will not even describe its nature. Barbara was not amused. I guess I should have known better than to rely on

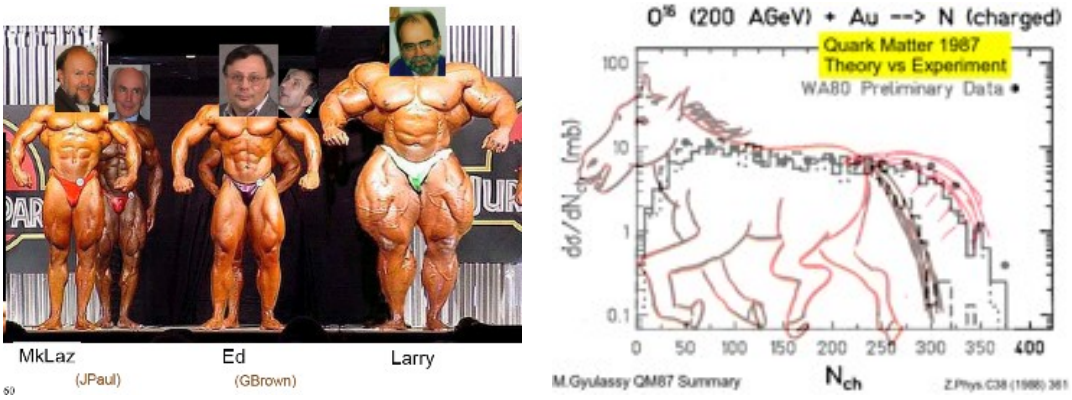


Figure 23: (a) The aging weight lifters.. (b) Not exactly the horse's mouth.

Miklos's taste. If I had only taken more seriously one of the plots Miklos drew for a Quark Matter meeting in 1987, to express his confidence in the ability of theoretical physicists to confront experimental results, Fig. 23b.

Miklos should heed the advice of Miguel Cervantes:

A closed mouth catches no flies.

Miklos has recently been interested in black holes and their applications to heavy ion physics. I should mention that these are not real black holes, the kind we are all familiar with. No. These are black holes that live in extra dimensions. Now one may at this point think that this distinction is a little silly, but in fact many theoretical physicists take extra dimensional black holes very seriously. In fact some think they may solve all their problems. I again quote from Miguel Cervantes:

In order to attain the impossible, one must attempt the absurd.

Before proceeding much further, I need to introduce two animals of American folklore. The first is Big Foot, shown in Fig. 24 a. Big Foot is a large, hairy biped reported to live in the forests of Canada and the Western United States. I can assure you Big Foot exists. When I

was a student in High School, a friend and I used to take people out on expeditions to see Big Foot. We always found one. Every person we guided to Big Foot's lair, returned home excited with a new story to tell.

The second creature is the Jackalope. This little critter appears to be a cross between an antelope and a jack rabbit. I assure you that this is physically impossible. The Jackalope is a species all to its own. It is found in the Western United States. To quote from the website http://www.sudftw.com/jackcon.htm

The Jackalope (Lepus-temperamentalus) is one of the rarest animals in the world. A cross between an extinct pygmy-deer and a species of killer-rabbit, they are extremely shy unless approached. None have ever been captured alive and this rare photo shows a mighty buck about to strike.

Known by the ancients as 'deerbunnies", it wasn't until the early 1960's that the modern more fearsome "jackalope" name was adopted.

It is written that you can extract a Jackalope's milk as it sleeps belly up at night. The milk is belived to be medicinal and can be used for a variety of afflictions. The truth is these creatures are aggressive and unpredictable, and should not be provoked for any reason!

The goverment wants you to believe they aren't real, but there are many who believe. The evidence is mounting!

Figure 24: (a) Big Foot au naturel. (b) A rare photo of a Jackalope.

I have written a little song to express my enthusiasm for Miklos's recent research, lyrics to be sung to the tune of "Home on the Range".

This song was popularized by Roy Rogers, a singing cowboy and TV star of my youth. Roy would ride his horse Trigger accompanied by his wife Dale Evans in search of adventure and save the world from evil. He always won and evil was always defeated. When Trigger died, he was stuffed and put into the Roy Rogers museum. (Dale was not as lucky.) You can hear the original song sung by Roy Rogers and Gene Autry at http://www.youtube.com/watch?v=oKBqz6FWvlo

The new words to the song are below. (During the banquet for the meeting, Xin Nian Wang, Volcker Koch and I led the audience in singing.)

Oh, give me a home, where the Unicorns roam,
Where the Bigfoot and Jackalope play,
Where seldom is heard a discouraging word,
And the skies are not cloudy all day

Home, home on the brane,
Where the Bigfoot and Jackalope play,
Where seldom is heard a discouraging word,
And the skies are not cloudy all day.

How often at night, when the black holes burn bright
Up there somewhere unseen with the stars
Have I stood there amazed and asked as I gazed,
Is their world more perfect than ours?

Home, home on the brane,
Where the Bigfoot and Jackalope play,
Where seldom is heard a discouraging word,
And the skies are not cloudy all day.

Then give me some glue and a few quarks too,
Flowing perfectly – ideal and true,
Where the jets are not heard oer the songs of the birds, And the charm is embraced by the goo.

Home, home on the brane,
Where the Bigfoot and Jackalope play,
Where seldom is heard a discouraging word,
And the skies are not cloudy all day.

In Miklos' research and in his life, he is very daring – always trying to accomplish new things. In Fig. 25 a is a picture of Miklos

Figure 25: (a) Miklos windsurfing (b) Tha ballon flight of Larry Walters.

windsurfing. His fearlessness and sense of adventure remind me of Larry Walters, the famous balloon aviation pioneer. I quote from www.snopes.com:

The incredible flight of Larry Walters, a 33 year old Vietnam veteran and North Hollywood truck driver with no pilot and balloon training took place on July 2, 1982. Larry filled 45 weather balloons with helium and tethered them in four tiers to an aluminum lawn chair he purchased at Sears for $110, loading his makeshift aircraft with a large bottle of soda, milk jugs full of water for ballast, a pellet gun, a portable CB radio, an altimeter and a camera.

Donning a parachute, Larry climbed into his chair from the roof of his girlfriends home in San Pedro while two friends stood at the ready to un-tether the craft. He took off a little earlier than expected, however, when his mooring line was cut by the roofs sharp edges. As friends, neighbors, reporters and cameramen looked on, Larry Walters rocketed into the sky above San Pedro. A few minutes later, Larry radioed the ground that he was sailing across Los Angeles Harbor towards Long Beach.

Walters had planned to fly 300 miles into the Mojave Desert, but the balloons took him up faster than expected and the wind didnt cooperate and Walters found himself drifting 16,000 feet above Long Beach. As Larry and his lawn chair drifted into the approach path

to Long Beach Municipal Airport, perplexed pilots from passing Delta and TWA airliners alerted air traffic controllers.

Walters eventually worked up the nerve to pop a few of the balloons with his pellet gun and eventually landed in a set of high voltage power lines about ten miles from where he started.

6 Recent Honors, Students and Postdocs

Figure 26: (a) The membership document for the Hungarian Academy of Science. (b) A statue of Miklos in Budapest.

In 1998, Miklos became a member of the Hungarian Academy of Sciences. In Fig. 26a, the membership document is shown. Someone also made the cutout of Miklos atop some statue in Budapest, Fig. 26b. This picture symbolizes Miklos in his status as a "K"uls"o" (foreign) member of the Academy of Sciences, whose building is seen in the background.

In 1992, Miklos moved to Columbia University to join the faculty of the Physics Department. Miklos has had a number of excellent students and postdoctooral fellows since moving to Columbia. His students have been:

Name	PhD	Thesis	Current Position
Ziwei Lin	96	Open Charm Production and Lepton Pairs at RHIC	Asst. Prof. E. Carolina State
Bin Zhang	98	Covariant Parton Transport in AA	Prof. Arkansas State
Steve Vance	99	Baryon Junctions in AA	Finance
Denes Molnar	02	Gluon Transport Theory and Elliptic Flow	Asst. Prof. Purdue
Ivan Vitev	02	Radiative Energy Loss	Oppenheimer Fell. Scientist LANL
Magda Djordjevic	05	Heavy Quark Energy Loss	Asst. Prof. Arkansas State
Azfar Adil	07	Probes of sQGP	Finance
William Horowitz	08	AdS/CFT Heavy Quarks	Postdoc OSU
Simon Wicks	08	pQCD Jet Tomography	Finance

Photos of some of them are shown in the montage below, Fig. 27.

To quote Miguel Cervantes one more time:

One of the considerable advantages the great have over thier inferiors is to have servants as good as themselves.

7 Recent Events

Miklos recently had a very serious heart attack. To quote from Miklos:

"I died on April 5, 2006 from an unexpected heart attack in Frankfurt. However, my guardian angels, John Harris and Dirk Rischke CPRd me back to life and the Uni Klinik ICU skillfully made me into a new bionic man with an implanted defibrillator and pacemaker."

A photo of Miklos before the heart attack and after are shown in Fig. 28.

At that time, we were all together in Frankfurt to celebrate the 70th birthday of Walter Greiner, and it was the day of the big banquet for Walter in the Frankfurt Ratskellar. Miklos was out walking with Dirk Rishcke and John Harris when he collapsed. Their quick actions, and the nearby presence of the University Klinik with its excellent facilities saved Miklos life. It took some time to recover and again in the words of Miklos:

Figure 27: Some of Miklos's students and postdoctoral fellows while at Columbia University: Denes Molnar, Ivan Vitev, Alberto Accardi, Magdalena Djordjevic, Ziwei Lin, Steve Vance, Urs Wiedemann, and Tetsu Hirano

"My wife, Horst, Oda and Walter Greiner nursed me for a year and a half so that I could get back on my feet."

While Miklos was in the hospital he continued working, and some photos from that time are shown in Fig. 29. Walter Greiner arranged for Miklos to stay in Frankfurt working in his group for some time until he recovered sufficiently to fly back to Columbia Univerisiy.

Miklos was very lucky to have recovered at all, and he made a full recovery.


Figure 28: (a) Miklos before his heart attack (b) Miklos and Gyorgyi in the recovery room in Frankfurt.

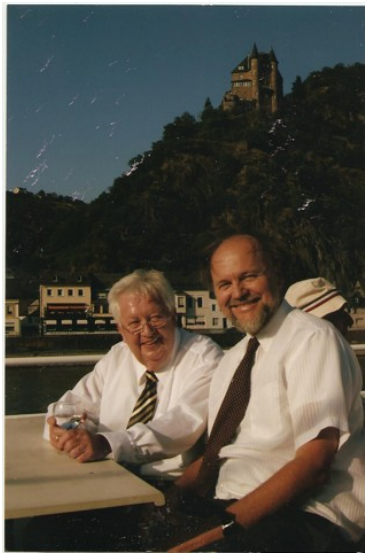



Figure 29: (a) Miklos and Horst working hard in the hospital. (b) Walter and Miklos shortly after the heart attack cruising down the Rhine.

8 Miklos and Family

Miklos has made deep and seminal accomplishments in theoretical nuclear physics. He can be very proud of this. I think perhaps he can

be even more proud of the family he came from, and the family he has made with Gyorgyi. I end with a simple montage in Fig. 30.

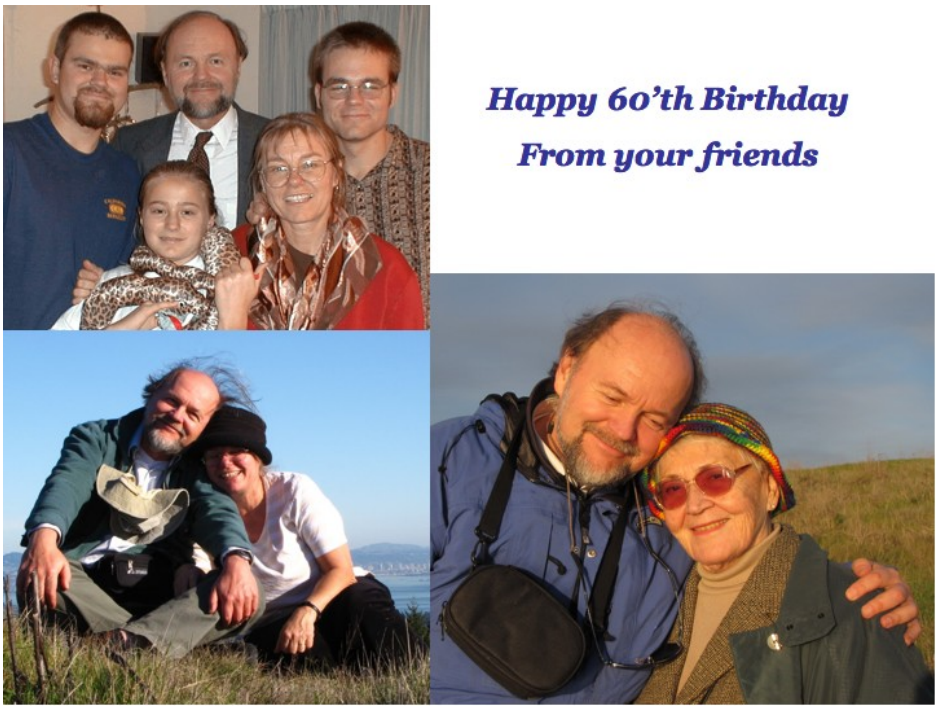


Figure 30: Happy Birthday Miklos

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