ALEXANDER SHULGIN

You have Russian connections but were you born there or in the US?
I was born in the United States. In Berkeley as a matter of fact.

You ended up working with the Dow Chemical Company?
Roughly from the mid 1950s to mid 1960s. I have a Batchelor degree in Chemistry. A Doctorate degree in Biochemistry and a further amount of time in medical school at San Francisco.

After your PhD you moved into the industry?
I worked for about 2 or 3 years in a small company that is now a giant company called Biorad. At the time there were five of us and that was in a little quonset hut down at the foot of Berkeley. We were primarily raising tobacco because we had a market for tobacco mosaic virus so we raised infected tobacco and made radio-isotope labelled odds and ends.

Radio-isotopes in the mid 1950s. That was fairly early...
Very very early, in fact it was some of the very first commercial availability of radioisotopes, largely Carbon 14.

This was before groups like New England Nuclear got involved.
Oh way before that even existed. Biorad were one of the very early companies, they are now a multi million dollar corporation.

So who had the idea to use these radio labels.
My doctorate work was with radiolabeled materials. We published quite a bit at that time, in the 1940s. Carbon-14 was just becoming available from Oakridge. There was no commercial angle on this – you got it and you paid for the freight and they made it available. And then companies began building up a business of making desirable materials labelled in various ways – tritium was coming on the market that time. I did a little work with tritium but primarily it was Carbon.

I got back into radiolabeling once I retired out of Dow and became a freelance self employed person. I got deeply involved with Lawrence Radiation Lab in Berkley, where I had the great pleasure of having access to a cyclotron and to positron imaging cameras and gamma cameras so forth. I worked with a group of fairly neat and maverick people there. At that time it was way before anyone was concerned about details such as public health and radiation exposure. We got away with everything we wanted to do. We used ourselves as subjects and had a marvellous exploring thing. We knew how to run a cyclotron and made bromine-77 and other things. We would work at night when everybody else was gone home. We had the run of the place and had fun.

A lot of that work got published and people are still wondering just how you could get permission to publish that. In the early days no permission was needed. If you observed something like a twitch after putting something in someone you say this leads to a twitch and you put a note in some

appropriate journal. Much of my early work was published in Nature and Science and various medical journals. But I saw the changes in the 70s and 80s. The focal point of change for me was the British Journal of Pharmacy and Pharmacognosy.

I submitted a paper about 3 or 4 new compounds that I'd made. I described how they were made and their human effects. I got a note, it turned out from the legal branch of the editorial board of the journal, saying we can't publish this unless you can give us assurance that the human health board of the Institute that funded it had given approval for human experimentation. Well I had used my own research group - we had about 24 people. On our research advisory board, we certainly had MDs, we had physicists, we had all kinds of people. I went round to them asking - do you approve of the work we're doing? Absolutely was the answer, so I sent back a note saying the research board had approved this work and that could be put into the experimental portion. And that's the last paper they accepted.

That was when?
Maybe in the mid 80s. The thinking was that human experimentation was not appropriate. Hey you can kill all the mice you wish but to go into a human was considered less and less ethical. I still feel its the only way to find things out especially in the psychotropic area. I don't know if rats or mice show changes in personality or changes from an attitude point of view.

When you began back in the early 1950s, your focus at that point wasn't particularly CNS was it?
It was a little CNS but no it was broader. I was fascinated with drugs that changed aspects of the human body – I was involved with everything from yohimbine to strychnine that would change some aspect of function. I began building up an inventory of how I responded to different drugs and from those responses I could say in my own research work this has aspects that resemble that or the other. I could make new chemicals easily and by exploring them I tried to build up a cloudy but I hoped an eventually to-be-clarified picture of structure and activity and their relationship. That's been my drive ever since. It's still a cloudy picture but it's a bigger picture now. So then I take you've read PIHKAL.

I've got both books but I can't say I've read both from cover to cover.
Well if you did you're a liar. The experience in PIHKAL of mescaline was the one that caught my fancy totally. That was in the late 50s probably.

This is after Aldous Huxley and people like that had been going on and on about LSD. Were you influenced by him?
I knew him but not well. In fact he had a relative who lived across the street from where I was working in Berkeley. So I met him on several occasions. My using mescaline was a little later than that. There was an interesting coincidence – Annie had an experience with the Peyote cactus, which is really the same chemical at almost exactly the same time. We didn't know each other but later we discovered we had almost set our clocks at the same time unbeknownst to the other some 15 years earlier.

Mescaline totally caught my attention. The concept that 100, 200, 300mgs of a white solid could reveal so much, evoke so much, explain so much and open so many unanswered questions - it's absurd to try to give the power of that just to a white solid. Its all in the head. And that was a catalyst to do more. My curiosity was if this simple molecule can do all that, lets put a something on this part of the module and see what that does. So from there on I began modifying structure and eating them and publishing on their effects. This began going very well – I was still working at Dow at the time.

Was Dow based here in this area?
Yes. It was originally in Pittsburgh California, which was a town you by-passed to come here, and then it moved into Walnut Creek, which is the town you went into to come here – about a 3 or 4 mile drive. They built a great big laboratory and then they finally moved back to Pittsburgh. The Head Office of Dow was in the middle of Michigan. Have you ever been to Glasgow in Scotland – well make a minature Glasgow and you have the middle of Michigan. It's not either charmed or is it blissed with much much joy. I would visit it occasionally and end up glad I was out in California.

In the last five years of my 10 year stint at Dow, by luck I invented a insecticide. I found a bottle of Zectran out on the roof of the garage the other day, a bottle of the old insecticide, which I hang on to as a souvenir. Zectran – mexacarbate - was the first of the biodegradable insecticides.

When I went to Dow as a chemist, they said here are three compounds we can make in quantities - almost unknown compounds. One was a methyl-tert-butyl phenone, one was something else and something else. Why don't you pick one of these and see if you can make some out of it. I said sure. So I picked the methyl-tert-butyl phenone because I loved the idea of the tert-butyl group being around the corner from an OH. I knew you see that physostigmine, eserine, which is the key of the insecticides, had a tert-butyl group round the corner from an OH. So I said I bet if I made a carbamate of that we'd have an insecticide. I had the good luck of having that idea witnessed by a couple of people. When it became a commercial insecticide, of course several people wanted to steal the idea and take credit for it and I just happened to have a signed witnessed thing that it was my idea.

So my attitude now was if you can predict from structure what the activity is going to be you just do whatever you want and make whatever you think might be active. So I went into the psychedelic work and their patience lasted for about five years.

Because you had the idea for this compound were you the one who took out the patent and did that make you money?
It was in my name. I got one dollar. In industry you get a dollar for your patent. Most patents belong to the company, they paid for it they own it. So I got nothing for that.

The reason I ask is that a lot of people who know of your work must think that you must have made an awful lot of money out of that compound and that's what let you retire and do what you do.
No nothing. Well actually you're given a dollar but the standard rule of the patent officer who is there is that they will match you even or odd. So you usually get two dollars or noting. It's sort of a standard gag in industry. Even more than that, I had another idea that eventually went commercial and went to Bristol laboratories. My name was on the Bristol patent [WHAT WAS THIS?] and Dow got all pissed because technically I was still working for them. I had been abroad for a year's sabbatical and they got unhappy with that and so Bristol sent the dollar to Dow and Dow didn't give it to me.

When you're in industry, you are a very well respected academic prostitute. You are working for what they want to be done. I was very lucky in that I was given a bit of a carte blanche but that was unusual. And of course I immediately got into the areas of making these various derivatives of mescaline. I'd screen [WHAT SCREENS] them all through Dow and argue that they may be CNS agents and that they should screen them in the CNS area. But on the other hand, I and my real research group would eat them and publish the results. I published them through Dow's name until they said they weren't comfortable with that, so I began publishing them with my home address while I was still doing the work in Dow.

Then about at the end of about mid 1960s I realised that I needed a lot more understanding of what was going on. I had a pretty good grasp on chemistry - synthetic chemistry was an art. I had no problem with that. But on the psychopharmacological side of things, I had to get more information. So I went to medical school and took the first two years. I wanted to know how things worked not how to get them to work when they don't work right but how they work when they are right.

I very carefully avoided getting a medical degree, which would have been a handicap for me because it would block me from doing what I wanted to do which is experiment on people. I then spent a couple of years in the department of psychiatry at Langley Porter in San Francisco involving myself with that research and becoming familiar with how these things went. At that point I decided the best thing to do was to become a consultant which is synonymous with being unemployed. I made my funds to keep myself going by appearing in court cases as an expert witness, consulting with various companies for ideas - coming in for the day [WHAT SORT OF CASES, WHAT SORT OF COMPANIES, WHY YOU – ANY EXAMPLES WOULD HELP].

I then also got involved with teaching but never on the academic staff. It was always as a lecturer, which is an exquisite cop-out. As a lecturer you had no obligations to do things that are academically required like being head of boards or committees or such. On the other hand you have no assurance you're going to be employed next year. That's what I wanted, so I was lecturing in Stanford and at Pacific Graduate School in psychology and at different universities in Sacramento, San Francisco and at Berkley for a number years. That provided enough funds to keep things going.

When I was working at Dow I was very Spartan in my buying and spending. I was very well paid there and I put a great amount of my income into Dow and other stock and I just let that sit and accumulate over 30 or 40 years and that's where my current income comes from - lucky or good investments at that time. Also I own the house here and I don't owe a penny of debt. I have my lab out in the back. I have a clean room at the back, which is a bedroom where I have NMR(?), infra red and instruments like that. So I really have no obligations. If I really want expensive instrumentation such as gas chromatography, mass-spect, GCMS, HPLC I spend a day a week – which is for a token payment – at the University of California in San Francisco at the SF General Hospital.

I'm unofficially on the staff at both Langley Porter Psychiatric Institute and SF General Hospital. Enough so I can use the library, enough so I can use the instruments but not so much that I have to go there very regularly. It's very neat I hold the key and I can go in and out, when I want. That's nice.

Let me take you back to the late 1950s when you'd taken mescaline first. What did the psychopharmacology scene look like at that point. You've got a few of the first psychedelic drugs beginning to come on stream, you've got chlorpromazine beginning to emerge. Who were the people and what was the thinking and what were the drugs?
Reserpine was just coming in. Chlorpromazine was discovered by accident in France and that discovery is an interesting one. The tricyclics did not exist, the benzodiazepines did not exist. My interest was not so much in the things that repaired psychological problems as in the things that would provoke psychological problems. I was into the development of tools for research and there's no better way of studying something disruptive in a man than to be able to create it and then see what changes with that and then see what can be found that changes the changes. I loved this work I was doing even though I was never paid for it. I worked very well with the people at Lawrence Lab because they had the instruments and the equipment and as I say we had the run of the place.

For example, one of my inventions of roughly 20 years ago was a material called DOB - brolamphetamine. I found the active position of this aromatic ring system and found that everything I put on there was active in a different way. [WERE YOU THE FIRST TO POINT THIS OUT. CAN YOU SUMMARISE THE DISCOVERY CHRONOLOGICALLY. WHAT IS IT ABOUT THIS PARA POSITION?]. With the Bromo compound, labelled with Bromine-77 and Bromine-82, we used ourselves as subjects we got ourselves onto a running tray over a Gamma counter, a battery of maybe 35/40 Gamma detectors, the body goes over this and as it does the detectors pickup where the Gamma rays are coming from in the body. It's very neat. Then you put another one on and do it again and you get in essence time lapse photography - a moving picture. You show it later on and you've got an image of ingestion and you see the dynamics of the radiochemical going through the body where it goes. Very dramatic.

Now, the interesting thing was the radioactivity accumulated largely in the lung. Only after 3 or 4 hours did it drop from the lung and appear in the brain. So the lung was the target organ, which didn't make any sense. Then you start thinking well the lung is after all probably the origin of the bulk of the afferent fibres up to the brain in the vagus nerve. It's a very sensitive organ in fact.

This is something you see with nicotine. When you take a puff and inhale it only takes a few seconds for the hit. But if you take a puff you suck it into your lung and then it goes over to the other side of the heart, down through the heart and it goes up the ascending veins gets into the brain. That's a 10 15 second tour minimum. How are you going to feel something in three seconds or so? It has to be from the lung. It's not the circulation of nicotine to the brain. You don't have the time for it.

With the bromo-compound it also became clear that it's not the drug itself that's active. The drug is a pro drug. Something else is active. We looked very carefully at this but never did find out. There was no ionic bromine in the urine so the bromine was not stripped off. Nevertheless, DOB and DOI are still probably amongst the most potent of the serotonin 2B agonists. DOB can't be used because it's illegal but they've never really discovered that DOI is equally potent as a psychedelic and it's not illegal so DOI is used quite widely used as an agonist with the serotonin system.

These are the kind of paybacks that I find to be very pleasant when you work up something. One of the greatest compliments is to have something that is so widely used and it's so well known they don't bother giving you credit for it anymore. It goes without saying. So I find it a compliment when I'm no longer cited in the literature. It's an interesting little bit of ego-stroke in a funny way. No we have a host of compounds in the second half of both books.

I'm getting out of that phase now. I am now into cacti and a whole new world of spiritual use, native use, religious use, medical use almost unexplored. Most of them have never been looked at. People are sending me cactus from all over South and Central America. Here's something that is used by the Husi Indians at the 8,000 ft level in Bolivia etc. I've got samples of this sort of thing so I'm grinding them up and putting them in the GCMS and finding what's in there, synthesising what's in there and making sure if the right things are there.

It sounds like a very simple process. You go to a plant, take out a compound and taste it and that's why the plant is active. It is not that simple. It is not as black and white as that would appear. One thing I'm finding now is an active cactus but none of the components are active. Yet the cactus was active. It's getting more and more apparent that one of the materials that is active is also oxidised immediately in the body by the monoamine oxidase system. But another component of the cactus is an enzyme inhibitor. So taking them together produces the effect. These little traps are gorgeous but they are also exasperating. You think you have the answer to a problem and it slips right through your fingers. Ayahuasca for example is a native combination of an

monoamine oxidase inhibitor and orally inactive tryptamine but taken ensemble they produce activity. For that to be discovered by the people in the Amazon forest is a miracle.

The whole world of botany is wonderful. All academic worlds are hopelessly partitioned off into territories with people with their names associated with this, who don't like those people and this university can't stand the guy in the same department in that university because he thinks so and so and I know such and such is right. With animals to determine whether animals are the same species for taxonomic purposes is very simple, let them hump and if you get offspring you've probably got the same species. It doesn't work with plants. If plants are desperate to get seed and there's no right pollen around they use their own pollen and you get something weird. Is it the same plant - there's no way of settling that issue. When botanists have identified new fascinating plants, they describe it and describe where they found it but they are aware of the fact that there's a continuum across a whole wide area of that plant and as you go further West it becomes taller, wider, closer to the ground and has red flowers instead of blue flowers. But this person looks at this plant, which has this character and they write it up in Latin. Another person looks at one over here a totally different plant in appearance, writes it up and has a new genus or species but you know they're the same. In a sense they are just geographically distributed.

When it comes to identifying these cactus, what are they, well I can give you three expert opinions but all different. So I'm going at it in a second way. Instead of being a morphotaxonomist, saying well given the colour of the blossoms and the shape of the leaf, that characterises it as being such and such. Then you have the chemotaxonomist – we don't care what it looks like, it's what's in the plant that counts. I'd love to go in that second route but that doesn't do it either. You have to go into pharmacotaxonomy. What you find in Central and South America are people who know the plants and the plants talk to them and they talk back and they learn from the plants. It doesn't yet follow any of these other academically approved channels.

A good example of that was a researcher who went down into the Orinoco area because he'd heard this one group had used a plant close to Cypress for post-partum bleeding. And he went down to ask if he could take some of the plant take it back to his laboratory and see what was in it that had medical value. He went down there and found the plant and said may I take some of that. But they said don't take that, this is the active one over here. He said but they're the same plant. Okay they're the same plant but this is active that is not. Now he knew his botany very well and he knew the plants were identical. And here the Indians were saying no not that one but this one. So he had the good wit to bring back both. And by golly this was active and that was not. What I learned from him was the term endotoxin or endophyte. It's a term, when something's inside something else and it turned out the ergot fungus was inside the active ones but not inside the inactive ones. But it was there totally inside so you didn't see. When it went into blossom, it got into the seed and when the seed planted the new shoot had the fungus in it but at no point was that fungus apparent. Fascinating.

So this is where you're talking to the plants and working with the people who use them. This is yet a third way of classifying plants and all have play a role together. That was remarkable. The whole ergot area is remarkable.

Lets go back to late 50s early 60s. Who were the people on the scene? People like Leary hadn't come onto the stage had they?
Leary was active in the scene but I knew him only casually. We had little personality conflicts. I did occasional press conferences with him back in that time. [ANY EXAMPLES OF LITTLE PERSONALITY CONFLICTS]

I had the great pleasure introducing Albert Hofmann to audiences also who was very active and still is at the age of 95 or 96. He had knee problems but is otherwise totally happy and active and very full of sharp wit. He's not travelling much any more he stays in Switzerland. I was down in Santa Barbara or Santa Cruz once, where he was invited over to give a talk and I was invited to introduce him. It was an almost self defeating obligation to introduce a well known person to 2000 students in a gymnasium when they knew very well who he was. I could make only a fool of myself if I did a proper introduction so I turned around and introduced the students to him. That was my first real meeting with Hofmann and it developed into a superb friendship. He was very active at that point.

At the same time you had Gordon Wasson who had his own agenda. He was known for bringing the mushrooms out of Mexico and for Morning Glory. I knew him well enough that I was involved in there with Hofmann who also got them and the mycologist in France [NAME] who blew the entire thing. He couldn't work out what was active. He wanted to get a standard behaviour test but it never worked. I also got involved with the Salvia divinorum at that time which was just coming into public awareness, then it dropped out entirely for about 20 years before coming up again. It was also found in the Mazatac area of Mexico – northeastern Oahaca.

The story of the Wasson's bringing out those mushrooms is a fascinating one. A whole lot of people went down with him on the tours. A couple of people in the military into chemical warfare went down disguised as photographers. They wanted the activity for chemical warfare purposes but they were totally inept. Some of the story has been published [WHERE?] and some of it has not. So the mushrooms went to this guy in France, who set up an animal colony but he couldn't find any activity. How do you isolate an active principle if you don't titrate its activity in some test. He totally failed.

Hofmann on the other hand succeeded completely because he would make an extract and he'd run a thinlayer chromatogram of the thing and the spots would appear on the paper. On the Monday he'd eat the first 10% and on the Tuesday, Wednesday, Thursday, he eat another 10% etc – a little silica gel inside you is not going to hurt you. The seventh 10% was where the activity was. So he used himself as the assay system rather than trying to get a rat to respond. And in less than a years work he had not only isolated, identified but

had synthesised psilocybin. He deserved full credit for unravelling a fabulous family of compounds.

I'm a freeloader, I pile on the information and then build on it. But when it comes to isolating things from nature, I've done two or three of them but nothing of this magnitude. So these were the people who were active at the time. Ram Dass was active, as was Stan Grof.

Stan Grof came a bit later - late 60s.
I don't know the timing. I could dig it out of my notes. There were people who were active at the time who have become totally obscure. Either because of mismanagement or changes of interest or misbehaviour. Jeremy Bigwood is a name that you may not have heard of. A writer at the time who was very active was Peter Stafford who wrote an encyclopaedia and a number of other books. A lot of people were exploring Trichocerous, which was not yet known to be active.

Another name at the same time was Gordon Alless, Professor of Pharmacology at UCLA. I had a very interesting not quite interaction with him. This was in the early 60s. He was the person who through Smith Kline & French had developed amphetamine and he had found MDA as being a potential appetite suppressant. Smith Kline patented that but he was the discoverer of that action. I had correspondence with him knowing that he was exploring the same area. One of my outgrowths from my investment in mescaline in the mid 60s was uncovering what was in nutmeg. [DO WE KNOW WHAT THE ACTIVE COMPOUND IS – DID YOU ISOLATE IT – EXACTLY WHAT DOES IT DO – SOME PEOPLE DON'T THINK ITS PSYCHEDELIC]

I was quite fascinated by nutmeg. Mescaline has 3 oxygens and nutmeg has compounds with three oxygens. The only difference was that nutmeg was a three carbon chain whereas mescaline has a two carbon chain. So I made the compound on a three carbon chain. The methoxy-compound was called 3,4,5 TMA. It was about twice as potent as mescaline. [CAN YOU GIVE ME A QUICK RUNDOWN OF THE HALLUCINOGENIC AMPHETAMINE FIELD BEFORE YOU GOT INVOLVED - DID YOU DISCOVER THE METHYL GROUP STABILIZES THE COMPOUND]

I knew Alless was working in this same area because we discovered at one point we had both made MMDA which is 3 Methoxy-4,5-Metylene Dioxy amphetamine and we had both discovered its activity. We were intrigued to meet one another because we were obviously co-exploring and going in pretty much the same direction. He was well known for his early work in the medical use of insulin. We were scheduled to meet in January and I discovered in December he had died of an accident. I knew he was getting into tryptamines. He had died of a diabetic coma of some kind. Now as a good medical person who knew about diabetes, that he should die of a diabetic problem was not quite consistent with what his experience would call for. So I had this horrible image that he was into some tryptamine that was very lethal and may be self experimentation.

There was no way of really finding out. But I did find his graduate student who had finished his doctorate degree under another professor there. I got the thesis and I went through it letter by letter but there's no clue of anything in there that would have explained his death. So I had to assume it was a medical misadventure of some kind.

This general area also brings in the work of Smythies. The fact that transmethylation was the orthodox hypothesis at the time for what was wrong in schizophrenia time must have helped tremendously.
I was up to my ears in Lawrence with transmethylation. We had methionine methylbutylguanine there. All these body phenones on methylation became psychedelics. I was very much involved in that. And in fact we did a lot of fascinating studies. One was using a C11 labelled methionine, which meant we had to really hustle because the C11's got a maximum 20 minute half life. We got a series of 10 normals and 10 psychotics, clinically designated as schizophrenics, as subjects. Our deal was to give these people the same radioactive labelled thing and run through them the PET scanner and get the same section. PET scanning is not very popular now it's just too damn expensive but it is a gorgeous tool. It's easy to lie and cheat by the way. You turn the gain up and make the picture brighter. So if this picture is done with drug and this one without the drug etc, if you are really biased you can turn the knob up on this one and prove your point which is unfortunate - it's hard to be totally objective. But when things are distributed differently there's no argument on it.

One of psychotic population was scared of radiation. My very good friend Tony Sergeant, who did a lot of publishing at that time at the Donner laboratory on this whole area, was one of the big spokesmen for the transmethylation argument. He was a radiochemist and a pharmacologist – but he also had a knack of talking to people who were not quite with you. We had a patient who didn't want to participate but he talked to this guy and he said you know you're right the radiation is quite a load on the body and the mind but I can help you here. We have a trick we can use. He had a whole body counter down in the basement of Donner's, with three or four inch lead on the sides and both top and bottom. This place is almost radiation free, he told the guy. I'll leave the light on so you won't get spooked but if you go in there for about half an hour and just sit there I'll talk to you from outside, it will so deplete your body of radiation that when you get into the positron camera you'll just be coming back to normal. A total lie but it worked.

We gave everyone radioactive methionine and we ended up with ten brain scans and everyone was different. We put them in a random collection on the wall and every time a visiting scientist from somewhere was asked which are the schizophrenics and which are the normals. And we kept tallies. There answers were just random. Except this schizy came in, the guy who spent his half hour depleting radiation and he said hey that's me. He was 100% correct. He picked his picture with no hesitation. So immediately the question was how did you know. Oh no problem he said. You see that little star shape figure over on the right hand side, I see that star all the time.

Now how do you explain that?
I don't. Except there is a lot about the brain that is unbelievable. You don't publish that kind of thing because it doesn't make any sense. But it's one these little vignettes that's very humbling.

Coming back to transmethylation did it mean that the establishment at the time – Seymour Kety, Daniel Efron were happy to liaise with you, whereas the equivalent people now wouldn't.
Well I was a young upstart coming through. I was branded as being a psychedelic guy, which was a bad word. In fact psychedelic didn't come into vocabulary until the Haight-Ashbury period. The orthodox term in the early papers was psychotomimetic, a very weird but medically acceptable term.

But all of your compounds would have played right into the transmethylation story?
Yes but my involvement was more peripheral. They were in the clinical side of things and I really had no medical voice. At this point I hadn't even been to medical school. I was a chemist - different territories. Smythies was a very interesting person who I met first in his home laboratory in Edinburgh. Then he went over to Canada and got involved with Osmond and Hoffer. This brought in the fantastic chapter of adrenochrome, which is still unresolved. Is it valid well - I don't know it might be. That's about the best you can say. Heacock was the name of the chemist who worked out the structure of it. He lived in Canada, in Nova Scotia or somewhere. So he synthesised the material but as a stable semicarbazone derivative. A lot of people took it and it had no pharmacological activity. But it wasn't the same compound, it was a derivative. No one seemed to care. Their argument was that we tried the stable derivative and it's not active lets go on to something else.

Then you have Hoffer, who got disinvited from the university and kind of disinvited from the whole of psychiatry. He was one weird interesting cat. I had an interaction with him at a different level. I knew George Elman who is the source of the Elman reagent which is used for checking creatinine levels in urine. He was at Langley Porter at the time. We decided we were going to look at the mauve spot which Hoffer was the source of. He had the arrogance to claim that the presence of the spot clinically diagnosed a person as being having mauveria, which was a thing he created.

It was spot associated with schizophrenia. George and I were having a discussion one day over at Langley Porter noting that we'd admit 10 people a day into the joint who were schizophrenic and we always run amphetamine and metamphetamine on their urines and about half of them were wacko from using half a gram a day of amphetamine. They get so you can't tell them from schizophrenia, except when you got them off of it they'd straighten up but the schizophrenics didn't. So we always checked the urines and we checked the urines of people coming in to see if they were mauve positive. None of them were. None. So we got hold of Hoffer on the phone and asked just what is the procedure he uses that we're not doing. We're doing a, b, c, d, f and no he said you should do a, d, b, c, f. We did it his way but the next five

diagnosed schizophrenics were all negative. So we got back to Hoffer again and he said I haven't got time to deal with this I'll turn you over to someone in the laboratory. The laboratory had no idea what was going on. So we did the obvious thing. At that time chlorpromazine was the number one treatment of this area. We both took a couple hundred mgs of chlorpromazine. We were zombified by it but by golly we were both mauve positive the next day and for a couple of days afterwards and then we became normal again. And so one more phone call to Abram saying by the way do you treat your schizophrenics with chlorpromazine. Oh absolutely, not to do so would be unethical. So we dropped the whole mauve thing.

More interesting at the time was Friedhoff's pink spot, which proved to be 3,4 dimethoxyphenylethylamine. That was a controversial thing that bounced back and forth and I was very involved with some of the people there because I knew chromatography and we had access to schizophrenics and we assumed it to be a dietary thing. Well hospital diets are not controlled diets anyway. And that thing died its death.

There was also a psychiatrist in New York who was totally enamoured with 4-hydroxyamphetamine, Burt Angrist, who I worked closely with. He was intrigued with the fact that 4-methoxyamphetamine is a rough but valid intoxicant stimulant. If it metabolized to 4-hydroxyamphetamine by demethylation, an allowable mechanism, amphetamine metabolises to 4-hydroxyamphetamine also. And could the excess use of amphetamine cause mental disturbance because you build up this metabolite that might be a metabolite of 4 methoxyamphetamine, which is known to cause mental disturbance. So he ran a dozen of his patients with different amounts of 4-methoxyamphetamine and found none of it in the urine. So that did not hold together. But he published all this and recently at that time 4 methoxyamphetamine sprang forth as an intoxicant being sold largely in the mid West and in the central provinces of Canada, under the name of Chicken Yellow or Chicken Little or Chicken something. There were some pretty bad medical problems associated with it and then it just disappeared entirely. It has re-emerged in the last 3 or 4 years and 3 deaths in Chicago have been assigned to it. They've been blamed on ecstasy but the truth is the autopsy shows the presence of 4 methoxyamphetamine. Up to about 16mgs you're okay and then you have a hypertensive crash that's very very hard on the body. But that was a connection to Burt Angrist.

The third person of that trilogy at Harvard with Tim Leary and Ram Dass was Rolf Metzer?. Three totally different people. They worked together on the Tibetan Book of the Dead and the Psychedelic Review. Metzer is still practising as a psychologist. He lives about 75 miles from here. He was the academic director of some institute in San Francisco, The Centre for Asian Studies. Tim is now dead. Tim was very out spoken, on the ragged edge. People said he probably did a great disservice to the psychedelic movement. I can't see that. He certainly brought awareness. People may not like it but the awareness I think was in favour of it. Ram Dass had a very bad stroke about two years ago. He's lost one side of his body but his speech is coming

back nicely and his wit was totally untouched by the stroke. It's fascinating to see his recovery.

He and Leary were co-arrogants. I stayed out of the picture. Every time you got to a press conference or something they would dominate the thing. I'd just get out. I was still pretty much in the closet. People in the academic world knew what I was doing but people in the open did not and I stayed in the closet until PIHKAL came out. Early on I used the words psychotomimetic because medically it was acceptable. Then the lurid word hallucinogenic came along which is a total misnomer. It came in because some people didn't want the formation of psychosis in the title so they called them hallucinogenics. They are still called that in the legal world. And the medical literature does not like psychedelics as it implies loud noise and nude dancing and drug use. It carries a baggage which is not considered desirable but I still use the term because people know what you're talking about.

That was the late 60s. I was in San Francisco Medical School and totally square because I wanted to get through. I got into some problems because I always did. I learned a lot of STP was being used down on the street, in Haight Ashbury, four blocks down below the Medical Centre. So I went down and walked around memorising the Circle of Willis for an exam that afternoon and all around me people were stoned on what they called STP. I had no idea what it was. It was about six months later I discovered it was one of my compounds. I had given it the name of DOM but no one knew what DOM was. I'd given a lecture back at John's Hopkins and I was talking about the structure of DOM and I think that's where the information got into the public domain.

IS THIS where the rumor that DOW were involved in all kinds of hallucinogenic miltary work comes from?

STP stands for what?
The original was Scientifically Treated Petroleum. It was the name of an oil additive. It became STP for Serenity Tranquillity and Placidity. No one could say placidity so it became Serenity, Tranquillity and Peace. And the Haight Ashbury people called it Stop The Police. And the police called it Too Stupid to Puke. Yes that was in the late 60s, the Haight-Ashbury summer of love. There was a lot of music. The Grateful Dead were very active.

I ran into Ken Kesey recently. We were invited to a mushroom conference up in a place called Brighton Bush, an unknown place in the middle of Oregon. Kesey was invited as a speaker. I had met him long ago but not for a long period of time - he became inactive in the public scene. He kept writing and he is now into presentation of plays and such. He travels in England quite a bit but he had reconstructed the Furthur Bus with all the colours and The Merry Pranksters. He picked us up at the airport at Portland in this bus, causing all kinds of chaos. The police guard said you can't park your bus here. Well I don't know if we can really start it right now, it has got a little problem starting, Kesey said. Meanwhile he was gathering all the people who were going to be riding down there to this meeting in the bus. He had a driver

who was one of the original pranksters. It was a total duplicate of the original, decorated with little twisty things. He had a little radio transmitter in there which had about a five mile range. He'd transmit around him and the back of the bus would say tune to such and such and people would come by and wave and he'd wave back he was quite a going character. But he gave a very good talk.

He's living in a more quiet mode in Oregon but he still gets out quite a bit and does a lot of good will things like presenting plays in areas where plays are not normally presented. Then there was Leo Hollister.

Leo would be very much aiming at trying to disprove any relevance of the psychedelics to clinical use.
Oh yes. We marched to different drum but that didn't keep us from respecting one and other. He was involved at Langley Porter as a consultant. I still have a strong suspicion about what drugs were involved with the merry pranksters business. They said it was LSD but there had been some 75gms of alphamethyltryptamine or alphaethyltryptamine that disappeared about the same time Ken Kesey did and I've always suspected there were other drugs involved that were not LSD in that trip of the merry pranksters. Kesey had no way of knowing and Hollister never acknowledged anything so nobody answered that. But Leo Hollister was very active at that time, looking at analogues of THC, of marijuana components.

Another person at that time was the author of LSD and me. An MD in psychiatry, he became a very important person in the Department of Public Health. I've looked for his book....

One of the other people you did link up with but I don't think it's the one you mean here was Arnie Mandell.
Oh Arnie Mandell that is a chapter in itself. He moved to Florida - dropped out of medicine. I think it was DOB he was involved with. He was still in the Department of Psychiatry at San Diego or Irvine and he got into trouble having published the Midnight something or other about football players using stimulants. He was told by the head of the football area if you publish anything about this you're going to lose your licence. And he said fuck you and he went and published it and they took his licence away for giving drugs without medical justification. But I remember he had a knack of having joined lots of little things - he had picture frames all around his office of diplomas here, honorary awards there etc. He was totally in love with his secretary. His wife was beginning to uncover this relationship and it was not comfortable.

But I was talking about DOB one time with him and he said you're saying DOB is active at 2 or 3 mgs - no psychedelic is active at that level. And so I gave him some and said be cautious. I got a phone call about 2 or 3 weeks later. He'd taken about 3mgs knowing it was not going to be active and he went out to Clockwork Orange, which was a dismembering movie about people who freaked out on drugs. A completely bizarre freak out movie, I remember thinking that's not one to see stoned. He took 2 or 3mgs and in the middle of it the thing began coming on. He was very impressed that 2mgs could be

active. And then he got involved with these legal problems and he developed a testicular cancer. Later he moved back to Florida, where he does a little bit or Artwork and a little bit of writing.

Smythies moved from Canada down to Birmingham Alabama. Down there they had two very good chemists, Bennington and Morin, who were originally at one of the Stanford Research Institute-like places in Ohio. There was also Ruben Fisher, who did a lot of the early work with psilocybin on the combination of sensory enhancement or deprivation with psilocybin. When he was doing human experiments this was back in those marvellous days he for example would take a print of a story and he clipped away 20 or 30 or 40 or 50% to see to what extent could the person make out the text when they were able to see only 40% of the letters. And at a certain point controls couldn't do it. Then he gave them psilocybin and their ability to make sense of an obscured text went up tremendously [REF ?]. These experiments using people as their own controls, I so much admired.

I've done a little bit of that kind of work myself. For example one of the early things I published on was N,N-di-iso-propyl-tryptamine, which causes auditory distortion but nothing visual. Everything looks perfectly fine except the radio on is playing the most God awful music you've ever heard in your life. The first thing was the Young Person's Guide to the Symphony. It was a horrible presentation, so I listened afterwards and it was very well conducted and a very well known orchestra. So I began exploring my own music. I'd go in and play the piano and the piano was out of tune. Well it wasn't out of tune but to me it was out of tune. I tried to play a fiddle with double stops and I couldn't get the double stops to be correct. It was not a matter of slowing down the pitch it's a matter of distorting the harmonic content of the pitch.

I'd love to make that thing radioactive and see where it goes in the brain. You're getting into an association area, not an auditory thing. It's as if you took away 50 cycles of every note and every frequency so what you're getting is no longer harmonic. An Oboe does not sound like an Oboe. You're not playing a Bassoon low but a different instrument because all the harmonics are screwed up. If it was out of tune terribly you can tell what the main note is - it's just a little bit flat.

So I took two people - both with perfect pitch. I used as a stimulus for one of them a piano strike and for the other a ?? which has no harmonic distortion by definition. Pitch only but no harmonic distortion being a single harmonic note. And I had them strike a note, record what pitch it is and they'd plot the error. Then I gave one 40 and the other 100mgs of di-iso-propyl-tryptamine and the error just grew and then it gradually came back and re-integrated to baseline. This again is both subjective and objective, using a person as his own control.

Bennington and Morin were superb chemists and they worked as a team very much as I worked with Peyton as a team. You might go in and ask "Fred by the way how do you synthesise such and such" and he begin to answer and the other guy would come in and add to it so that between the two of them you got a total picture. They would complete each others sentences. That kind of

unit for working together. A very good team of chemists. They ended up in Birmingham Alabama Neurological Institute at the university. Smythies was there. I don't really want to use the term – but he went on the Magnolia circuit. He'd lecture to people. He was the grand old man of this area but he dropped out of research entirely – he was never very much into research as a matter of fact – he was more of a speaker and an idea source. An interesting person.

I need to pick up with you how MDMA came into your life.
MDMA came in it must have been in the very early 70s. I was told by a person about this interesting compound - she was a chemist from the mid West. The interesting thing to me was she had talked about this as an N-methyl material and in my explorations of N-methyl psychedelics none of them were active. But this was. I made it and found out that indeed it was active but it was not a psychedelic. I got very interested. I was exploring it initially as a low calorie Martini so to speak. I went with my late wife on the fun train to Reno. Most people take a boxed lunch or a sandwich or something. We'd take a little table cloth, a little candelabra, a martini mixer and we'd have fun going up there having a quality meal. And I took a vial of this material and said can I use this in place of martini and see how it fits. It fitted beautifully. The slight disinhibition of alcohol – it locked right into that. So I was looking in that direction. But also the possibility of its use in therapy.

Leo Seth, who I referred to as Adam in PIHKAL, was a psychologist, who had worked for about 30 years using psychedelics for therapy as had a number of people in the area. This was a whole chapter of people known to one another but not known to the public who explored this area. He would use it in therapy. He was what I call the earphone type of therapist. Some people interact and talk eyes open. He would put earphones on eyes closed even a nightblind shade of some kind. And he sat by alongside and let the person do his own thing. If a person has a question he's right there and if a person was a little disturbed he had his hand right there for them to hold. But he'd read a book. The therapy worlds using largely LSD and some ibogaine were quite opposite. He was about 70 odd and retired from the whole area.

Are you aware of The Secret Chief? Myron Stoleroff, a very early explorer of LSD as a research tool for exploring psychological changes, wrote a book The Secret Chief which is Leo's story. Anyway I gave him MDMA and said just give it a try. He said I'm getting too old for this. I said give it a try. He gave it a try and it brought him right out of retirement. And so I kept him supplied with the drug and he went out and supplied the Western world with the experience itself and then with the chemical and that was the blossoming of its use in psychotherapy. I would say about half and half psychologists and psychiatrists were involved in that.

Then it began slipping into popular usage in the early 80s. It became notoriously popular. I have some of the early magazine articles on it – the name Ecstasy came in about 1983 or so. The Federal Government could not take the popularity being shown in Texas - people were making piles of money on it. It went into a legal challenge in 1985 when it became illegal by dictum because there was an emergency scheduling law in effect there. They

held hearings over the course of the next year in Los Angeles, somewhere in the mid-West and in Washington and a lot of people testified about it's value in medical use but it had no what was called accepted medical use whatever that means - it's not defined. And it went into Schedule One, which eliminated any public use of it in therapy.

A lot of people continued using it in therapy but just absolutely secret. It's still going on today but you're not going to find people to interview - it's a crime. Now slowly its use in therapy is coming back into possibility through Israel, through Spain, in post-traumatic stress syndrome. I feel it's going to be very powerful tool letting a person unravel why he is where he is. But not in this country. It will not be a long time I'm sure before it comes out here.

Why is the USA so rigid about all these drugs? Does it link back into the Haight-Ashbury thing?

Actually I think we are a very aggressive culture and I think a lot of it has to do with our need for an enemy. We had Russia for a marvellous time - the Iron Curtain and that business. The dissolving of the USSR dropped that out as an enemy and about the same time the War on Drugs began. The use of the word war is a good clue. You don't have war on drugs, you don't fight white solids, you fight people. I find a rather chilling parallel to Germany in the 1930s where you had the war on the Jews. It was the Jews who were the problem and if you'd only clean up that problem we'd have no more poverty, we'd have no more crime we'd have no more social disorder everything would be gorgeous. And the drug user became that surrogate target here. Read the Cui Bono chapter in TIHKAL. This gives a picture the size of the War industry. People say why can't we just call it off. Well too many people are making too much money on it. And it's politically a guaranteed entry into power.

Power, control, money they're in essence synonymous to one another. It gives the US a lot of voice in other countries. The State Department thrives on it. 1.3 billion dollars to Columbia. My question is to whom in Columbia. We have paramilitaries there, we have at least two reactionary Contra groups and there's also the Government itself. It's a pre-Vietnam chaos coming down the line. But people benefit from it. The argument is made that a lot of the heroin and opium comes in from Columbia. These are lies. Who is the largest country in the world providing opium and heroin? Its Afghanistan - 75% of the world's opium last year and heroin came from Afghanistan. If you include Burma and Thailand you have about 90%. All the rest of the countries make up the difference including Mexico, China and other areas in South East Asia and Columbia. It's almost trivial and yet it's being used as a vehicle for economic transfer of power and accumulation of power.

The losses are to our civil liberties - to our Constitution. Nowhere in the Constitution, in the Bill of Rights or the Declaration of Independence anywhere is the term presumption of innocence used. That's from British law, way back to Magna Carta days. It's not written in England, it's just known to be part of the system. It's not written in this country, it was known to be part of the system but it's being totally ignored in this country. There is now the

presumption of guilt. If you think you are innocent prove it. And that is coming to be more and more a way of reorganising, restructuring society.

The military is being brought into this despite the passage in 1885 or so of the Posse Comitatis Act, which precludes the use of military in any civil law enforcement. It's being potentially ignored and since Reagan the military's being brought more and more into the war on drugs. The military need money, they need power they need strength and for this they need enemies around the world.

Let me come back to the MDMA, what exactly is your role in it?
I and Nichols were the first people to publish its human activity [REF?]. So that's why I'm called the Godfather. The chemical predates me. It's hard to say exactly when it was made but definitely the patent - which I can get you a copy of – was held by the Merck company and was issued 1914 [REF?]. It was applied for in 1912. One of the early myths that came out in the area was it was patented as an appetite suppressant. Nonsense it had no use medical use at all. The patent says these are interesting compounds as precursors to what may be pharmaceuticals. So it was patented as a compound not as a use. But myths once started tend to grow up and be maintained by being repeated and many magazine articles or books merely repeat what previous articles and books have said. [CAN YOU SEND ME A COPY OF THE PATENT – I CAN PAY ALL PHOTOCOPYING/POSTAGE]

Let me take you back to the point you mentioned earlier that one of the first papers on amphetamine or an early precursor of that showed enhanced performances
Look back at the first publication on amphetamine as an augmenter of physical capabilities. I would guess it's the mid-20s[I HAVE LOOKED HARD AND CANNOT FIND]. It would need a little bit of sleuth work to find that paper and find the author. I'd never seen the paper, so this may be mythology but I've been told that the concern was the results could not be right because it should not be possible to improve on the normal state. In journals at that time you can see the whole argument about the loss of this and the deprivation of that - the negatives. Very early in the process we began to disavow the positives of cannabis for example. And yet it was the main thread of the medical literature back in the turn of the century. Morphine had a huge use in the Civil War - all of the curing agents contained morphine, opium as a major component.

But the use of alcohol was forbidden to women in England before the turn of the century. They turned to Hoffmann's Drops which was a mixture of alcohol and ether. In fact ether was very broadly used in Western and Central Europe. Chloroform was widely used. Lewin who was an excellent lecturer and envied by many because of his knowledge of pharmacology brought peyote back into Germany from the Southern United States. Heffter was the one who first discovered the presence of mescaline in it, although mescaline was not synthesized for another 30 years.

This paper mythologically or not gives the idea that the optimal state is a drug free stage. When did that begin to change?
In lots of people's eyes it hasn't. It's a cultural issue. When did alcohol get involved when did nicotine get involved. These are not constructive drugs but they are used because they produce a state that is desired. So does alcohol enhance performance, enhance feeling? Well yes and no. Those who say yes use it. And if you put your psychedelics in the same category. Heroin is a supreme example of a material I dislike it as I dislike cocaine because I just cannot shake the image that I'm not learning from it and it's not genuine. So these are not my drugs of choice. Whereas I can learn from a psychedelic.

What about the Ketamine group of drugs – you're not enthusiastic about those either but they would qualify as psychedelics wouldn't they?
In a sense yes. Salvia divinorum goes in the same category as Ketamine. PCP is in the same area. What you're doing is you're not into a visual rich area - you're out there in the cosmos. And you are really learning a lot from out there. Some guy back in the living room has a full bladder and you don't care even though it happens to be you. Also the lack of exacting recall, the slight muddying or amnesia, all these are not my things. I do not like Ketamine or PCP for that reason.

Another one that was very popular and is still off and on popular - is scopolamine and related compounds, where you have the non-reflexive mydriasis so that you have a general eye opening and light coming but the entire experience is wrapped in total amnesia, very often to the point of hazard. And yet that has been used for centuries in Belladonna, Henbane, Mandrake - all these are examples of scopolamine in action. Are these destructive, are these negative, do these cause a deterioration. Does a person who believes he can fly sitting on a broom have enhanced performance or not?

Well there is the area that you bring out in TIHKAL, which is that all these agents can do things to you but they don't necessarily make people better people. How do you reconcile that?
If I had to reconcile it I would say it probably makes a person more sure that what he's doing is correct. If I were a sociopath, a compulsive liar or if I happened to hump little kids or something it would give me confidence that I'm probably going on the right path. So no it doesn't bring out the good but I think it brings out confidence in what you're doing is right. So it could to a negative person be negative.

I had a very dear friend who's now dead who pestered me for years wanting to try MDMA. He had two properties that spoke against it, one he was an alcoholic and after work he'd live in a bar, about a block from his house so he never had to drive. As a person often in that kind of environment would get he became a sort of bar psychiatrist who helped other people with their problems and meanwhile he'd barely make it home. The second one was he was almost pathologically anti-homosexual. I had deep in my inner feelings the hunch that maybe the alcoholism and the denial of homosexuality as a tolerable thing might be a blind to cover a feeling that potentially this might be

a property of his. And if you opened up with honesty what was going on in there with MDMA, he might very well see that and he might rebel against it with violence. He was a heavy guy and I just didn't want to take the chance of being there with him.

So there's a case where I don't think you make a person better; you could actually make a person worse by bringing out those aspects of the unconscious. You hide that beast. But if you really want to use that beast as an ally, you go down in and recognise it, not just to acknowledge what the beast of the unconscious side of things is but to look at the world through its eyes. Then it's still a controlling factor but it's not necessarily an enemy. That could also work against a person – you take your borderline personalities and others who are barely coping. If they find a pattern that is OK, sometimes it is best to let it be.

One of the themes you brought out that I like was this idea about what we seem to be doing at the moment scientifically is learning where these drugs go in the brain rather than what they do.
Yes, where they go in the brain doesn't tell you anything. A very interesting seminar was being advertised up in the radiation lab in the biomedicine section on how psychedelic drugs work by a person who is a well known scientist from the National Institute of Mental Health. I went with great interest because I'd worked for decades and was interested to hear if these questions had been resolved. But the lecture was on was the distribution of radioactive substances in the rat brain. I said that was a neat talk on where psychedelic drugs go in a rat's brain but what does it have to do with how they work in man. Oh we have no way of studying that, he said. So the title was a sucker in but it didn't address that at all.

When I get into lecturing I move away from the term brain and talk about the word mind which irritates people who are right and left oriented because where in the heck is the mind, what is the mind. If they roll with that and I still want to irritate them I'll move over to the soul or spirit or what have you, a little bit more nebulous. These are things you're working with that are not pinnable down, they are not radioactively labelable. Maybe the centre of the mind is in the spleen I don't know. Maybe the brain is only the machinery that allows you to have the concept of the mind. What I want to do is to look at how things can be used as tools to explore where a radioactively labeled auditory distorting agent goes.

I had an interesting event in the lab about a year or two ago. Very impressive. A friend of mine said he knows a young couple with a 10 year old son who wants to become a chemist, could he come down and see what a real laboratory looks like. Sure come on down. So I had this young kid and his parents in the laboratory. What do you show in a laboratory to people - well smells. So I began going to the shelf and taking off this and I say now here's something that has a smell. I personally don't believe things have bad smells or good smells. They're just smells you don't like or smells you do like it. So I take the stopper out and the father would always be the first to smell to make sure I wasn't going to hurt the son. I just wanted to know if it was good or bad.

So they would say oh I really like that or oh I don't like that at all or I can almost not smell that at all. That kind of thing.

Then what happened was about the fifth thing I opened up was a bottle of anhydrous diethyl ether. The father smelled it and didn't like it. The son smelled it and thought it was interesting but didn't like it. The mother smelled it and this was the impressive result. By the time she smelled it out of her mouth came a word. I tried to trace the timing necessary to go in her nose to her association area and come back out [TAPE FINISHED]