

The Power of Building Collective Fields of Creation

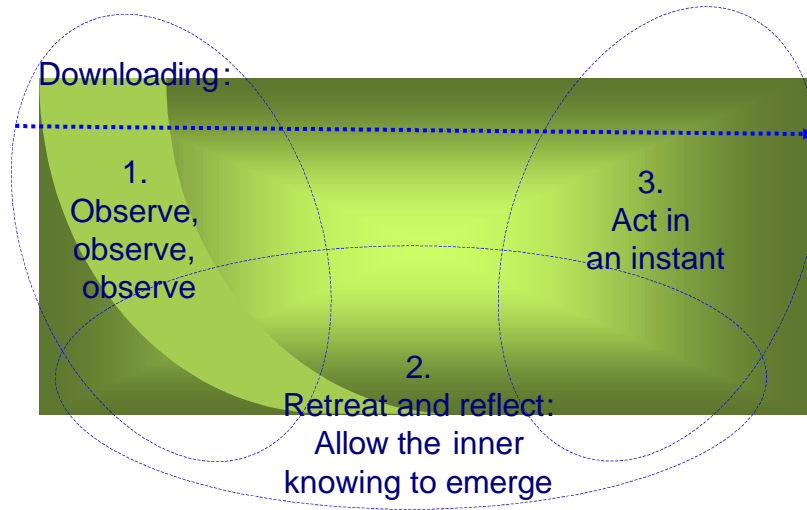
Conversation with Dr. Frank Douglas,
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I. You observe. You then form hypotheses. And then you perform experiments.

Claus Otto Scharmer: Dr. Douglas, the economist Brian Arthur suggests that in order to organize around deep emergence leaders have to engage in three core activities: “observe-observe-observe,” “retreat and reflect: allow the inner knowing to emerge,” and “act in an instant” (*handing the figure below to Dr. Douglas*).

Frank Douglas: (*looking at the figure*) Yes, this is an elegant way of describing what I do. I have often seen what I do as based on the research paradigm. As a young researcher, what I learned is that there were three things you do. You observe. You then form hypotheses. And then you perform experiments. And, basically, that’s what I do. I spend a lot of time observing. Then I form a few hypotheses and then I design some experiments, which I implement and learn from.



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II. Keep building the road as you go

And one of the things that I know sometimes frustrates my colleagues – and particularly my German colleagues – is that they would like to see a plan laid out which predicts how this would happen. And I say to them, if I knew that, we would not be having this discussion.

What I do know, based on what I have seen, is the direction in which we need to go. I set up **criteria** that help me determine whether we're going in the right direction or whether we need to make modifications or whether, indeed, a hypothesis is incorrect. So I have warning signals, and with my colleagues set up the criteria ahead of time. We make sure that the criteria are visible, transparent. This way everyone can participate in evaluating whether what we're trying to do makes sense or not. **And then we learn from that and keep building the road. But I do not start off with the complete picture of how every stretch of that road should be built. That is not my starting point.**

When I used to be in the lab, that's basically what we did. We made observations, spent a lot of time reading, created a hypothesis, then an experiment. You got results from that experiment that either led you to a confirmation of that hypothesis or helped you generate another experiment to further test the hypothesis. So, for me, **that's what I do in management.**

COS: Well, that's really fascinating and I would like to track the story along those lines. So let us start at the beginning. Where did your folks come from?

Frank Douglas: I was born in Georgetown, Guyana, formerly British Guyana. Came from a relatively poor family. Grew up as most poor families did, trying very hard to get scholarships.

Got a scholarship to go to what was, still is, called Queens College, the number one high school in the country at that time and I think still is. I got a scholarship to attend Queens College which was in the British system, so I did O levels and A levels for your audience who have a British or Commonwealth background. And was headed to British universities when I received a fellowship from the American government. Actually, a Fulbright scholarship as an undergraduate. I went to Lehigh University, where I studied chemistry in the engineering school. After completing a B.S. at Lehigh I went to Cornell University, for the Ph.D. in physical chemistry.

I really loved physical chemistry –

COS: What drew you into that?

Frank Douglas: Into chemistry?

COS: Yeah.

III. Between two worlds: arts and science

Frank Douglas: Very candidly, when I did my O levels at home in Guyana, I had a real problem. Should I be in the arts stream or in the science stream? Because I had capabilities in both. And I decided that, in a real sense, if I were to go abroad, I should study science, because I could stay at home and do correspondence courses in, for example, history or literature. But if I were to go abroad, I should do science.

COS: You found yourself in between these two worlds.

Frank Douglas: Yes, I was right in between these two worlds and in fact couldn't decide for a while whether I would be in the arts stream or in the science stream. Finally the decision was made by my family who said: You know, you're a bright boy, we expect you to go abroad and study. Well, it only made sense to do science if I went abroad. And when I received the fellowship from the American government, the Fulbright scholarship, it was wide open. They said you could do, based on your scores, you could do engineering, you could do physics, you could do chemistry. And so I settled on doing chemistry in an engineering school. The truth is I had no idea about universities in the U.S. I only knew British universities.

I wanted to go to America because most Guyanese went either to Canada or to England. So I wanted to go to America and really learn something new. So that's why science.

Of course, growing up in Guyana, every bright kid is expected to become a doctor. After I finished my Ph.D., I went home. I told my mother that now I had my doctorate. And she said, Well, does that mean you can see patients? I tried to explain to her the difference, but she was so disappointed that I really wasn't a doctor. *[laughter]*

COS: Was that why you went on to medical school?

Frank Douglas: Yeah, she was probably like every mother. It was probably that that caused me very quickly to be dissatisfied with the type of research I was doing at Xerox. I actually went to work for Xerox after my Ph.D. I was there for eighteen months.

COS: Was that at Xerox PARC [Palo Alto Research Center]?

Frank Douglas: Not Xerox PARC, no, I was in Webster, New York.

COS: But you could have gone to Xerox PARC –

Frank Douglas: As a matter of fact, when I told the senior vice president and head of Research at Xerox, that I was thinking of leaving because I was a little bit disappointed and frustrated with the type of work I was doing, he made two suggestions. One that they transfer me to XeroxPARC. And the other that I go to Stanford University and do a program in decision theory. Dr. Tribus was very much interested in decision theory and, based on conversations he and I had, he thought that I would really enjoy that.

And I almost did that. But fascinatingly enough, I was sharing the lab with a man named Charles Levine. And Charles was one of these very inventive types who had many Xerox patents. But he didn't have a Ph.D. And he was about 55 years old and was being pressured by the company to take early retirement. So he ended up sharing an office with me. Often he would say to me, **What are you doing here? You're an academic type. You should go back to the university.** And one day I came into him and said, you know, I actually have gone to three or four universities to discuss doing a post-doc in biophysics. And each one of them asked whether I was interested in medicine. Why don't I go to medical school? Learn anatomy, learn physiology and then go back into the lab?

And he said, why don't you do that? I said, my god, I'm 29 years old. I've had enough school. **And, god bless his heart, he said to me, Do you know how many people would love to go to medical school?** And so there I was. Next thing I knew I was in medical school. And so it turns out, as a matter of fact, that created another real difficulty, because I turned out to also have become a good clinician. As a result, at the end of my residency at the Johns Hopkins hospital, they approached me to return to Johns Hopkins after my stint at the NIH. I could take either a position as a clinician in the Department of Medicine, or a joint appointment in the Departments of Clinical Pharmacology and Pharmacology bridging basic science and clinical applications.

IV. Sensitivity to both worlds: science and management

So I ended up – which is probably germane to what I do as a manager – **I ended up having this type of sensitivity to both worlds. Both for the basic science work as well as for the clinical aspects, which, as a manager, I would just interpret as a sensitivity to what it is that makes scientists do the things that they do in an organization.**

COS: So you returned to Johns Hopkins?

Frank Douglas: Yeah, I did my M.D. at Cornell and then went to Johns Hopkins in internal medicine, where I did my internship-residency. Then to the NIH, where I did what sounds crazy or strange, but I did what one would call a fellowship in neuroendocrinology. Basically, I was looking at what and how neurotransmitters in the brain control the cardiovascular system. And so I spent three years there. After that, I went to the University of Chicago in the Department of Medicine and Clinical Pharmacology. I was also the director of the Hypertension Clinic there. The directorship of the Hypertension Clinic was partly the factor for my deciding against returning to the Johns Hopkins hospital. However, a more compelling reason was that Dr. Jules Axelrod, who was a sort of mentor when I was at the NIH, recommended that I take the position at the University of Chicago.

I spent a short time there, actually a little over two years. And during that time I was highly sought after by headhunters to join the pharmaceutical industry. I had done a couple of studies, given some talks. Eventually, I accepted an invitation to visit Ciba-Geigy. I went because the headhunter said, There's a guy who's just become the head of Research who knows you and wants to talk to you. The guy turned out to be Dr. Thomas Glenn, whom I knew as an academic. He had recently become head of Research at Ciba-Geigy and he said: Look, Frank, I just want you to come work for me. You can do anything you like, just come work for me.

And I had a wonderful situation; namely, I could get a year's sabbatical from the university. Dr. Arthur Rubenstein, who was the chairman of the Department of Medicine at the University of Chicago, said: Okay, we'll hold your position for a year. And if you don't like it, you can return.

So this was the deal I had and I went to Ciba-Geigy and suddenly found –

COS: And where was that located?

Frank Douglas: This was in Summit, in New Jersey. And my task was to set up a small unit that we called Clinical Biology. The idea was for me to have a small group that did what is now called translational research; namely, we would mimic, if you like, the NIH, where people go between the lab and the bedside combining lab observations with clinical studies.

This is why I tell people that I'm probably the only person in the industry who got promoted for killing drugs, or potential drugs. Because **three years thereafter, I became the head of Research for the U.S. for Ciba-Geigy**. And I think it was based on the ability of this group that I had, which was assigned compounds that were already in the clinic, for which Development was unsuccessfully spending a lot of money, and with which we did very selective human studies based on the preclinical information available. And we made decisions, many of which led to termination of the development projects.

V. A small research group turns into a hub for innovation

What happened in that time period, however, is the group that I led – which was a small group initially, just eight people, and then grew to 40, when we added the pharmacokineticists, etc. – **that group became sort of a hub to which the discovery people came for advice; the**

toxicologists / pathologists came for advice, and the development people came for advice. So, suddenly, the group that I led was really being sought after by all parts of the organization. And in a real sense we were dealing with both the discovery and late-stage development. So that when it came time for a successor to Dr. Thomas Glenn, who had moved to another company, I became the internal candidate. Everyone basically said the guy who understands discovery, who has a scientific, a basic scientific background, and who's also a clinician is Frank Douglas, so I took over as the head of Research.

And it was there, as a matter of fact, that I discovered that I had certain perhaps strengths of which I was not aware. Dr. Max Wilhelm – unfortunately, he's passed – was at that time the global head of R&D; in a very poignant visit I had with him at his home in Basel about three weeks before he died, he said to me: You know, when we asked you to take over as head of Research, it was clear to us you didn't want to do that. You kept insisting you're a lab guy and you want to be at the interface between lab and clinic, etc. But there was something that you have that we recognized, and now it's clear that you didn't recognize it. And that is **you are able to think in systems. And that's often unusual for basic scientists, that you can think in systems.**

He said, And the second thing that you do well is translation. **You can see early compounds and get a sense as to whether they're likely to succeed in the clinic.** And because of that we felt you would be a better manager of scientists and more successful than you would be as a scientist at the bench. And I said, You know, Max, you're right. It took me a long time to accept that.

COS: Say again, what was the third element?

Frank Douglas: There were the three things. One, that I think in systems. Secondly, that I can do this translation, I can see compounds and get a sense of whether they will work in the clinic. And the third one is that I was really a better manager of scientists. I knew how to get people to work together around a scientific idea. Then, he said, I would be more successful doing that than being a bench scientist.

COS: And so that's what he said.

Frank Douglas: Yes. That was it. He died in '98, I think. And he turned out to have been right. Because when I took over the research of Ciba-Geigy in the U.S., it was in difficult straits. And I said to Doug Watson, who was the president in the U.S. at the time, **Look, let's give this eighteen months. If I can't turn it around in eighteen months, get someone else.** I said, because, for me, this is the type of job in which, **if you don't win the hearts of the scientists within the first six months, you're not going to make it. And if by eighteen months you cannot show actual progress, actual outcome, then you may as well give it up.** And since I came from amongst their ranks, they were going to scrutinize me much more, and critically, compared to someone coming from outside the company. I would have no honeymoon period.

And it turned out that, again, some of the things which I did that were new at Ciba-Geigy were at the time bold and daring.

COS: What was that?

Frank Douglas: For example, I immediately said, Okay, we will focus on two therapeutic areas, which had been agreed on globally but we weren't really implementing. And I said: We will implement the two therapeutic areas we were given – cardiovascular and rheumatoid arthritis. We will do no more central nervous system disease research. That has been moved to Basel. We accept that.

Secondly, we will really work in teams. And so I developed a series of teams around projects, with co-leadership between the biologist and chemist. I did the co-leadership because, at that time, biologists and chemists were fighting each other.

Thirdly, I immediately designed, with the help of the Center for Creative Leadership, a series of workshops, that I called **Innovation Workshops, to which I invited everyone who touched that project, including secretaries and technicians.** And that was unheard of.

And –

COS: What did such a workshop look like?

Frank Douglas: Such a workshop looked like, we came in and – you'll never forget it –

COS: You all were in one big room?

Frank Douglas: Well, we started off in a big room. Usually, we'd have about thirty people. And we'd come into the room in the evening to the sound of "Bolero." There was Zubin Mehta on video conducting "Bolero." Individual interviews with the musicians were also shown. And what comes across through these interviews is that here you have each musician [who is] an expert in himself or herself and yet these experts have got to be in contact with each other. They have to sense each other, play off of each other, take cues from each other, and play as a team. And his job, as the conductor, is to make that happen.

It was a very good image for what we needed to do. We gave everyone a copy of that tape. And the music, "Bolero," as you know, is so powerful, it was also a subliminal message for people. Because you can't help but hear this – the music of "Bolero." They came in and the tape was playing. And then we looked at the interview. After that, we did something that also turned out to amaze the participants. We asked individuals to pair up and to tell each other something about themselves that was usually not known. And then, as a group, it was shared. And it was amazing.

We had, for example, a woman whom I'll never forget. You would never have believed this. This woman had walked up and down the Grand Canyon three times. To look at her no one could believe that she would have the physical ability to do it. We had a young man who was a

pilot. We had another man – he was in his early 40s – who was actually a rabbi in his community.

And so suddenly you began to see people not as technicians doing an assay, not as scientists working in a particular area. But as individuals who have capabilities beyond what you see in the work setting.

So the question then became, given that, how do you tap into that creativity within the workplace? A creativity that's being played out outside of the workplace. How do you do that?

COS: This is still evening one, right?

Frank Douglas: It's evening one. The next day, they did the usual measures, Myers-Briggs type instruments, for people to get a sense of their decision-making or creativity styles and preferences. We did an instrument that the CCL had designed in terms of creativity so that people could get a sense that everyone brings something to the table, but they may come at it from different perspectives. And, therefore, in a team, you want to leverage all of these diverse perspectives. .

On the final day, we had the team sit together and, based on what they had experienced in the previous two days, then work through the goals of their project and commit to each other what they were going to do to make their project successful. And this was something that had never been done, particularly including secretaries and technicians. We also identified the technicians who perhaps could do more than their current jobs, and so we introduced for technicians a possibility to apply for protected time that they could devote to special projects. And there were some innovative things that came on stream based on their contributions.

COS: You developed that?

Frank Douglas: I developed it with CCL and my HR person.

COS: I mean to give the techs the opportunity to apply for special projects?

Frank Douglas: Oh, yeah, that was one of my ideas.

COS: And that idea came when you watched them –?

Frank Douglas: When we watched them. Yes. And then it was easy, because then you simply said, Okay, now that you have this experience, how do you think we could help technicians be more productive? And someone said, Well, you know, could we have time? And I said, Yes, why not? And everyone agreed. And so I said, Well, why don't we set up a competition where the technicians could present small project ideas, and like in academia, get funded to pursue them.

COS: I'm particularly interested in that moment. You're watching the technicians and then you get the idea that we could make much more, that they could do much more, they could create

much more in the workplace. And that links back to when you talked to your colleague who passed away a couple of years ago –

Frank Douglas: Yes, Max.

COS: Max. Back then Max saw your gift.

Frank Douglas: Yes.

VI. Leadership as seeing

COS: Max saw you had something you weren't aware of yourself, but he saw it. And that also links back to Jürgen Dormann, who saw your gift and brought you into Hoechst and Aventis. People have told me that Dormann has the gift of a special way of seeing; he can see people and their dormant potential. Leadership is about activating this deeper kind of seeing. So what, what's your way of describing this way of seeing and what you really do as a leader?

Frank Douglas: You know, seeing potential, I can give you many examples where I have done that. Perhaps the most outstanding example to date is Günther Wess – he's now head of our R&D organization, which we call Drug Innovation and Approval, in France – prior to this he was head of Frankfurt site and is now head of DI&A, Europe.

When I came to Frankfurt, he was one of the guys in the opposition, if you like. But I noted that, unlike many others, whenever he asked a question, although it was an antagonistic question, it was nonetheless a thoughtful question.

COS: You noticed that.

Frank Douglas: I noticed that. And so I went to one of the board members and I said, Tell me about this guy Günther Wess. And he said to me, as a matter of fact, we think he is a real talent. And I said, okay, I'll take a chance on him and I will put him in charge of Screening.

And it was amazing to me. He came to me shortly thereafter, after he received this assignment, with ideas about how he would change it. And I will tell you, every time I have given him an assignment, he has grown.

So it came in '98, I needed to have, because I changed the approach, I needed to have a site head for Frankfurt. And we looked at different people and I said to Mr. Markham and Mr. Wäsche, I said: You know, I'm going to take a chance on Günther Wess. I explained to them how he changed and improved Screening when I made him head of Screening. I also explained that thereafter I appointed him global head of Chemistry, and he courageously globalized and changed the way chemistry was done.

And they asked me, Well, you know, we have all these problems with unions and the like, you think he'll be able to handle it? I said, I don't know that. But I'm quite sure we have enough people that he can tap into, that I can tap into to help him do that. And it was amazing. We had significant problems and challenges with the Works Council, and every time he and I

went into a battle with the Works Council, this guy came out stronger than he went in. I mean, he just grew by leaps and bounds.

And I have a sense for that. I don't know why. I have a sense for individuals who have this capacity to grow and who will think differently when given the opportunity. I have another case, Daniel Schirlin, on whom I took a chance. He was the head of Chemistry, he's now head of what we call Lead Generation. He has Genomics, HTS, Chemistry, and Chemical Development under him. He's growing by leaps and bounds.

And I think that's one of the things that Max said about which he was correct. I have a sense for that. And that sense, I cannot explain it to you, but it comes from observation. I observe and I listen to people.

COS: When do you know that you know? So what is it you pay attention to?

Frank Douglas: I think I listen. I listen, I listen – a number of years ago, I think this probably describes it, if I may show you the following. In fact, I was at the Center for Creative Leadership on a program. And we were discussing organizations. And in fact, they have used this thereafter, at least for a number of years thereafter.

And I said, I'm going to pretend now that I am a consultant, so I'll draw the 2x2 matrix. In my view, **in any organization, you have two things. You have the values of the organization. And you have behaviors.** And this may explain what I look for. There are some people in the organization who don't share the values of the organization and who can't behave in a manner that would make the organization productive. I call them rebels.

You have people who behave the way you would like them to behave. They come to work each day. They put in their 8 hours, their 8 to 5. But they don't really care about the values. It doesn't matter where they work, they'll do that. I call them conformers.

Values

Mavericks	Future Leaders
Rebels	Conformers

Behavior

Then there is a group of guys who, you know, they're just different. They share the values and the goals of the organization, but they behave differently. I call them mavericks.

And you have a group of guys, and I'm never quite sure what to call them, but they share your values, they behave, they model the right behaviors. In fact, I had a different name, but the CCL suggested future leaders. Okay?

And I said, in any organization I run, there is a place for everyone except rebels. My view is, if you don't share the values and you're having difficulty behaving in a way that moves the organization forward, then you owe it to yourself to go elsewhere where the values are more consistent with your own.

For mavericks, I say, I want mavericks, they help you change the paradigm. But when I have Desert Storm, the mavericks should not expect to lead the army. They can walk free within the army, but not lead it. And I wish conformers would decide to become either mavericks or future leaders, but that is life.

So what is it I look for? **I look for these two guys. I look for the mavericks and the future leaders. And I love mavericks.** And, in fact, I think it's one of the things that helped, when I took over as head of Research at Ciba-Geigy, where we had a number of mavericks who were having difficulty in the organization, for whom I found a place by really pushing for a dual career ladder. What was happening before was that many scientists who never wanted to be managers were trying to become managers in order to be recognized, in order to be rewarded financially. With a dual career ladder, they could be recognized for their science and be compensated for what they contributed in their science. So the mavericks suddenly had a place.

So what is it I look for? I look for individuals who can be future leaders based on whether they are modeling the behaviors and whether they share the values. And I also look for the mavericks. Forget about how they behave. Do they share the values and are they the guys who will keep us on the cutting edge, because they keep challenging the status quo, they think differently. And I look for such individuals. And, you know, I tell them, Don't expect to be a big manager, but we value your contribution, I want you to do the things you do.

VII. Take two to three months and just observe

COS: So you became head of R&D at Ciba-Geigy.

Frank Douglas: Well, the R part. At that time, R&D was split; I became head of the R part. And then, in what turned out to be a sad situation, I was then asked to go to Basel and become the global head of D.

COS: What year are we now in?

Frank Douglas: This was end of '91. Became head of R in 1988. And end of '91, I was asked to go to Basel.

At that time, I actually had been looking outside of Ciba-Geigy and was offered the global head of R&D at Marion Merrill Dow. Marion and Merrill Dow had merged about a year before, but the R&D were still separate. So my job was indeed to merge these two R&D organizations.

COS: Round one.

Frank Douglas: Yes, round one. And I don't know, looking back on it, Max was really very sad. He felt he had failed in that he had not won me over to go to Basel. We discussed that. But I went to Marion Merrill Dow (MMD). And that had challenges of its own, but there, in a real sense, is where I think I finally accepted what Max had said. Because I came into a situation in which Marion was very successful on the Development side. It had basically no Research, there were a hundred people in Research. Merrill Dow was very successful in finding compounds, but was not as successful in developing them. And these two groups were apart, on the one hand.

On the other hand, I quickly realized that MMD had two major compounds in the market, and that in itself was a precarious situation in which to be. And I quickly realized that one of them, Seldane, was going to be in trouble, as I began to read the reports from the FDA. As it turned out I was given a wonderful opportunity when I went to Marion Merrill Dow in that Fred Lyons, **the CEO, said, you know, I want you to take two, three months. You don't have to start running R&D right away. Take two to three months and just observe.**

COS: Wow, what a great leader.

Frank Douglas: And I said to him, I don't know what to do. Because I've always been called in, I've been told 'you're it' and the next hour, I'm on the job.

I decided, okay, I have these two, three months. And I said to him, How will we know when I'm ready? And we looked at each other. He said: We'll know. I said: Well, could we agree on a number of things that probably I need to do so that I will know when you think I'm ready? So we agreed. Again, my list of criteria. And so I started going to meetings, talking with people.

And then, finally, I did the following. I held a meeting in Strasbourg. **I brought together from the two organizations people who had never met with each other, but were the leading forty to fifty scientists globally in R&D. Before doing that, I sent them a questionnaire. It was a very simple questionnaire. It had five questions. And the questions were, One, what do you see as the strengths in MMD? Two, what do you see as the weaknesses? Three, what do you see as the barriers? And the fourth one was, if you were in my job, what's the most important thing you would do? One or two things? I've forgotten the fifth, but those were the questions.**

COS: Great questions.

Frank Douglas: And, actually, they were simple questions, it was amazing. We came in and we spent, about a week in Strasbourg.

COS: The whole group.

Frank Douglas: That forty to fifty, it was forty-seven. Brought them to Strasbourg. And we spent a week. And I also brought two to or three people who were familiar with quality tools. I wanted them to use certain tools, to help the subgroups think and work together, to have good discussions, good brainstorming, and then come to conclusions and recommendations.

And then, out of that, we developed basically the R&D strategy. So I came back to –

COS: These forty-seven, so they were the key people.

Frank Douglas: They were the key people in MMD.

COS: So you basically asked them, what do you need me for as your leader?

Frank Douglas: Yeah. **What do you need me for? What is it you think I should do? What do you need in order to make you one of the best in the industry?**

COS: And then you gave them a process, you created the context that allowed them to think together, to synthesize what they were seeing and thinking together.

Frank Douglas: That's right. And then they committed –

COS: Then you had your agenda.

Frank Douglas: Right. I got my agenda, and they committed to make that agenda happen. So then I came back to Fred Lyons and I said, Okay, here is what we're going to do. We're ready. And one of the first things I did was to go to tell Fred Lyons: You know, Fred, I know you are trying to put Seldane over the counter. I think the FDA is telling us that they don't even think this drug is safe enough to be on the market as a prescription drug. I've looked at the molecule and there has to be a metabolite of this molecule that might be active. I would like to talk with the scientists and see if there's a metabolite that is active that we could really develop as a follow-up. We had lots of discussion around it. He didn't quite share that view. But, eventually, he said, Okay, you do it, but sort of stay out of the way. And I said, Okay, I'll have nothing to do with Seldane. That's well on its way with your discussions. I'll focus on the metabolite.

That drug became Allegra. And we were able to develop it rapidly. We went from not having a synthesis to submission in three years. Which meant that, in order to do that, I had to change a lot of things in MMD. As I told them, we have to do this, like when it is the summer in New York State and you have to repair the highways. You don't have the choice of closing the highways. **So we have to build the road as we travel on the road.**

COS: So you used that as an example to create change.

Frank Douglas: Yes. Because one of the things I happen to believe in is, if you want to make changes, you take something that is extremely important to the company, where it is a ‘do-or-die.’ You put yourself on the line. But you also signal to the organization that this is important. If you do it – you know, if you do it on something that the organization doesn’t think is important, it never gets done or, if it gets done, then you have the next step. How do you introduce this and really spread it within the organization? This next step is a real hurdle.

When do you do the pilot, and when do you go for broke? And, in my view, in the MMD situation, this was when you needed to go for broke. Because I was coming into a situation where you had two groups, both of which felt that they were doing things the right way. How do you develop a case for action in which they both agree that we need to do it differently?

VIII. Hoechst MMD and Aventis

COS: And then came Hoechst?

Frank Douglas: Then came Hoechst. And that was an interesting situation, because at the time, I was being asked to step down from being head of both R&D and become head of R, global head of R. And I had an option with a major American pharmaceutical company to join it as the head of D and as the successor to the then head of R&D who was going to retire in about two years. And I was the successor candidate. This was all written and I would come in, take over D and then take over R&D in two years.

I decided to stay with MMD. And it had to do with two things. One, it had to do partly with Allegra. You know, we were getting close to submission. But it also was a **feeling of continuity and the feeling that we had spent, as a team, a lot building the MMD. And to just walk away from that and leave the team of scientists with whom I had worked just didn’t feel like the right thing to do at that point.**

COS: What’s that, is that a moral judgment or what is that?

Frank Douglas: I don’t know if it’s a moral – I like not to think in terms of morality. I rather like to think in terms of **contribution and responsibility. In fact, one of the things I tell, it’s one of the things that I’ve used in MMD and here, now in Aventis, but certainly in Hoechst Marion Roussel, is that we should focus more on what we contribute and less on what we control.**

Contribution for me is important. That I am contributing to the organization, to the patients, etc., that’s always important to me. And the second one is, **What is my responsibility, really? I have a responsibility to myself and to my family, but I have a larger responsibility to all of those individuals to whom I can contribute something.** And I felt at the time at MMD, this transition, **there was more I could contribute. Therefore I had a responsibility to do that during that transition instead of simply walking off and saying, okay, I should take the path that was best for Frank Douglas.**

COS: It strikes me that both in the case of Ciba-Geigy and during the first two or three months at MMD you were doing the same thing.

Frank Douglas: Yes, it was the same thing.

COS: You build a powerful hub—a kind of creative collaborative field. The conditions were different but it sounds like in both cases you built this sort of creative hub or collective field.

Frank Douglas: Maybe, yes.

COS: And once this creative or collective field was established you couldn't just walk away. There is some kind of link –

Frank Douglas: There's a connection and there is a link. Yeah.

COS: A link to what?

Frank Douglas: I think it's a link to what it is we can contribute. It's a link to something greater. One of the things, for example, when I came to Frankfurt, was very interesting. Members of Hoechst often asked me – and the way they asked it, it was clear what answer they wanted – Do you think our Research in Frankfurt is amongst the best? And I said, I can only answer the question the following way. First of all, let's ask ourselves what are the top four or five products that have come onto the market in the last four, five years? Let's identify them. And then let's ask ourselves the question, Were our scientists back in Discovery working on those types of ideas and projects a number of years back? If the answer to that is yes, then we have really smart people who can identify important mechanisms, important projects.

Then we ask ourselves a second question. Did we ever find compounds? If the answer to that is yes, then we've got chemists who can find compounds.

And you ask yourself a third question. Did they get into the development phase and the clinical development phase? And, if so, did they make it amongst the first five or six to the market, and if not, why not?

I said, If the answer to that last one is clearly no, we don't have them, then we have to ask ourselves what it is about the way we manage and our decision-making around the projects and the way we manage the development phase. [Then] we get the answer.

Now, that wasn't the answer they wanted. Having said that, it became very clear to me what I needed to do here in Frankfurt and also in Paris with the Roussel part as we incorporated the Marion Merrill Dow part. I had to start off from scratch asking those questions and getting a group together, which is what I did again.

I pulled a group together, and this group, particularly in Frankfurt, was saying, We're the best, we're the best. And I said, I'm not here to debate that because, in a real sense, here is what the data say. **In 1980, '81, '82, Hoechst was the number one pharmaceutical company in the world. Now, we are in '95 and Hoechst is around number 19**, with this constellation, HMR,

we are now number 3 or so, but we haven't earned it. We have not earned it, because this was a merger. So I don't know where we really are.

COS: You came in as the head of Research for Hoechst Marion Roussel. So what is your own way of making sense of that? In 1981, Hoechst was number one. And then, with the same approach, same breed of people, it dropped to number 19. Now, what happened?

Frank Douglas: So we need to understand that. That's the observation. It is irrefutable. We don't have to spend time arguing about that. That's the observation.

Now, to use the paradigm that you mentioned to me, this is the introspection part. Let us spend time trying to understand how we went from being number 1 to number 19. And let us develop some hypotheses and test them.

So the best way to do that, in my view, is not to have a consultant come in and do that for you. Because you then have this issue, first of all, [where] everybody feels that they're being judged. I came into a situation, which you need to know, was a very difficult situation because from the Frankfurt scientists' viewpoint, Hoechst bought Marion Merrill Dow and the head of Research is the guy from Marion Merrill Dow, not the Hoechst guy. What does that mean? Does that mean that they had done a poor job?

IX. My first meeting: after ten minutes a block of people walked out

And they asked those questions very openly in forums. I remember at one of my first meetings being asked, How come you were chosen to be head of Research? We bought Marion Merrill Dow. Very bluntly. And I said, You can't ask me that, you need to ask Mr. Dormann and the board members, they made the decision. So, you know, I can't answer that question. So there was this opposition to my presence to begin with.

COS: Sure, you have a very German culture and then coming in an American with this whole different approach as the head. I mean, that must have been an incredibly difficult situation.

Frank Douglas: It was a very difficult situation.

COS: Did you speak German?

Frank Douglas: No, no. In fact, I will tell you how I began to learn German.

COS: How did you survive?

Frank Douglas: Well, the following happened. **In my first meeting, and I will never forget it, we made a mistake. They should have had an interpreter for me. I don't know if it would have made a difference, but there was no interpreter. And we had about 700 colleagues, associates in this meeting and I was introduced. And I got up and, of course, I spoke in English. And after about, oh, five, ten minutes, a block of people stood up, said something which I didn't understand and walked out.**

COS: No.

Frank Douglas: Yes. And I asked –

COS: Your people stood up and walked out?

Frank Douglas: And walked out.

COS: After 15 minutes?

Frank Douglas: No, it was about 10, I had just begun. And so I asked, What's that? And it was explained to me that many of them belonged to the Works Council and what the leader had said was that he was sick and tired of listening to people who can't speak the language. And they walked out. So, clearly –

COS: *The* language.

Frank Douglas: Yes, *the* language. Cannot speak German. And it was clear that this was planned ahead of time.

And so I said: Okay, this is what I've just learned and I will do the following. I know you guys believe that Americans are lazy, they don't want to learn a foreign language. And you're probably right. I will do the following. I will publicly try to learn German. You will see me trying to do that. I don't know if I'm going to succeed. But you will see me trying to do that. And I will do that because I am expecting you also to do things differently. So that's my commitment.

So I started trying to learn German. The funniest thing happened.

COS: Were you planning that?

Frank Douglas: No.

COS: It came to you spontaneously?

Frank Douglas: It came spontaneously. So I started taking lessons –

COS: By that you established the principle of reciprocity.

Frank Douglas: Yes.

COS: I expect you to change –

Frank Douglas: – So I am going to change. And I will do it publicly. And the issue was another thing that I am clear about: the result is not as important as the journey and the process. I am clear about that. If you believe that something is worth doing, whether you think it's going to be 100% successful or not, you do it.

And so for me, it was a big risk, but it wasn't that much of a risk, because I knew that I would really immerse myself into trying to learn German. And, if at the end of the day I didn't

succeed, I would simply say okay, I don't have those skills, simple as that. Much to my surprise, I had skills I didn't know I had, because I learned German very rapidly. And what actually happened was, in December, we had a big meeting, three thousand people. And I gave a brief introduction, which I read. I had practiced furiously and I read my introduction in German. Everybody applauded. I went home for Christmas, and when I returned people would see me and talk to me in German and I didn't have a clue. Didn't have a clue. So I said to Frau Stoeber, please, find me a place where I can go for two, three weeks and immerse myself and learn something.

So I went to this school, called S&W, in Meersburg. They have many great stories about my first week in the program and about how awful they felt, because they said many executives who come to this school really don't want to be there. Their company had sent them. But there was Frank and he was trying so hard and just not getting it. And then suddenly the second week, he was speaking German and conversing –

COS: Really?

Frank Douglas: Yeah. And I came back to my office and Frau Stoeber, my assistant, was very surprised and that was it.

COS: Second week?

Frank Douglas: Well, I'd had a number of weeks of lessons prior to going to S&W– And, so I came back and started running my staff meetings in German and then conducting meetings in German.

So what that did, unknown to me, that bought me an awful lot of goodwill. People were very surprised, because later in that year there was another large meeting in which I read my presentation in German. There was an interpreter and I had an earpiece for the questions and answers, which didn't work. After the second or third question, I removed the earpiece somewhat spontaneously. And people then were surprised, because they thought I had just simply read the speech. But there I was taking questions and answering in German without the translator. And that bought me an awful lot of goodwill. And I think that, more than anything else, after about a year, people realized that I was serious about this assignment. And I think that began to bring people on board with the changes I wanted to implement.

We nonetheless had battles through '98. But at least it began to develop.

X. Transforming Hoechst Marion Roussel

COS: You were brought in in order to reinvent the whole thing, right?

Frank Douglas: That's correct. And one of the first things that we had to do – and we had tremendous opposition from the Works Council and the unions, you know, aided and abetted by the Ph.D.s – was to do an open, transparent evaluation of projects across the three sites. And I wanted an external group of scientists as the panel to judge the projects.

Now, in Frankfurt, nobody had ever questioned the scientists about their science. No one had ever done that. And so what I did, which is another thing that I do, I focused on what I wanted to achieve. I said the following: Okay, I am not going to design this process. And this is one of the ways I use consultants. I said, Okay, let's get a consultant. And you and the consultant sit together and design the process. **I only have the following criteria, which have to do with how we will know that the process was robust. And I said, You can design it any way you like. I insist on having an external panel of scientists to judge – you can choose the members of the panel. I don't have to choose them. I can have a veto, but you can choose them.** We need to have present all of the senior scientists who can contribute to a scientific discussion to evaluate these projects and compounds. You can identify them, and I will invite them. I insisted that they must be senior and can contribute.

Each project will be presented and certain things needed to be addressed. Namely, what's the mechanism of action? What is the hypothesis that we have? What's the competition? The compounds we have, how good are they with respect to a number of parameters? You know, PK absorption, metabolism, their toxicology. If we have moved into Phase I, Phase II, what are we seeing clinically? What's the patent situation? These are the things which need to be presented for every compound. You develop the scoring system.

And so that's what I did. Prof Ernst Winnacker was one of the members of the panel. At the end of it, he came to me and he said: I cannot believe it. You sat here for three and a half days. You never stated your own opinion. And you just let things run. But nonetheless, he said, somehow or other, you were in control. And I said, I wasn't seeking to be in control. The process was robust enough, I could live with the results. It's as simple as that. It was transparent. The discussions were open. And it didn't have anything to do with whether I personally thought a compound was good or not. And, of course I had views on compounds. But the truth of the matter is, my opinions were not as important as the decisions made by this body of scientists.

And as angry as people were – and many people were very angry and during their presentations directed negative comments towards me and what I was trying to do – I just sat there, ignored it, just made sure the process was being followed. **I said at the end of the day, there's something about scientists you need to know. They're very proud people. And at the end of the day, they want to be sure that they can get up in front of their peers and defend their science. I was banking on that. That was the human part of all of this. That at the end of the day, after day one, day two, that was going to take over, their pride about being scientists in front of their peers.**

And that was our first breakthrough.

XI. Leading by creating hubs

COS: So, again, you did the same thing, right? For Ciba-Geigy, you created the hub. And then

Frank Douglas: Yes. Marion Merrill Dow, the hub. And here again I created the hub. Anytime I wanted to create a change, I took a hub of people, usually a subset. And we spent two or three days discussing that and having them come up with the recommendations.

COS: So what are the criteria that you have for constructing the appropriate kind of hub?

Frank Douglas: Very simple. **First, Who are the people who have the information, the experience, the expertise? Secondly: Who are the people who will have to live with the consequences of whatever we decide? And thirdly: Who are the people who are the real change agents?** Hopefully, [they are] amongst those first two. If they're not, you bring them in. Those are the three things I look for.

If you have the expertise, then you can analyze the problem and you can come up with solutions. If you have to live with the consequences of those solutions, then you're more likely to choose the reasonable solutions. And then we need change agents, the people who will come on board and really make it happen. And those are the three things I use to determine whom to involve in a change effort.

So then I don't have to deal with issues around hierarchy and the like. I only deal with hierarchy if an individual is key to implementing the change. But I get away from hierarchy that way. **And in the European setting, one of the most stifling things is the hierarchy. And that is a continuing battle. In the U.S., it's easier.**

XII. A defining moment

One of the key moments which I will never forget here in Frankfurt – in '98, we had lots of problems. Unions were –

COS: I remember.

Frank Douglas: Yeah, you remember. Oh, we were getting a lot of negative press. That year was it. You know that was the culmination. But I will never forget one event in that year., You have moments in your life which are really defining moments. This was one of them. The head of the Works Council, Mr. Weber, organized a debate to which he invited the members of the Works Council. And it was held here, in Höchster Hof Hotel, not far from this office.

And participating in the debate were Günther Wess and myself. Günther Wess had become head of the site, Frankfurt. And he and I were debating against Prof. Mutschler, a very famous, just-retired academic scientist, pharmacologist, who was representing the unions. Two National Union people. Mr. Klemm, who was the Minister of Economics for Hesse. The moderator was Mr. Christian Schulte, a famous radio personality.

I told Günther Wess: Günther, **in such a situation, one cannot win. So we are not going there to win the debate. In fact, we're not even going there to have a debate. What we are going there to do is to use the opportunity to explain what we're trying to do.** Which means the following.

One, we do not engage anyone in an altercation. Even if someone says something that is incorrect, we do not respond to it. Ten or fifteen minutes later, you may correct it, but without making it seem as a direct response.

And most of the time, just be quiet. So we went in and the professor immediately started attacking me for the terrible things I was doing to hurt the company, etc. The union person began attacking me. And then, suddenly, the moderator said, Okay, now we need to hear from Dr. Douglas and Dr. Wess . I stated what we were trying to accomplish with the changes. Of course, this was all in German. Then I turned to Günther for his comments. Then followed statements from various panel members, but without directly engaging each other. We listened and then, when it was our turn, we explained what we were trying achieve with the planned changes.

And suddenly near the end of this, Mr. Weber got up and I will never forget it. He said, Okay, Dr. Douglas, I think you have convinced us that we need to work differently. We need to improve our innovation and productivity. You've also convinced us that we need new skill sets. Is there a way of doing that without reducing the workforce? And I said to him, Mr. Weber, that is a very good question. Let me tell you what I've done in the past. In the past, both at Ciba-Geigy and at Marion Merrill Dow, when faced with a similar situation, I have offered to the scientists that if they would go back to the university, spend a couple of years and learn new skills, we would pay their salary during that time and we would re-employ them. The only requirement was that in that new area they would have to operate at the level of at least a new Ph.D. They would have more to bring to the table because they were already experienced in the drug discovery arena. If they were prepared to do that, we were prepared to support them. And that was the breakthrough. That was the breakthrough.

COS: So that shifted the atmosphere –

Frank Douglas: It shifted the atmosphere –

COS: What made it shift?

Frank Douglas: I think what shifted it were a couple of things. I think within the debate itself suddenly it became clear that we weren't there to destroy value. But indeed, we were faced with the reality that we were no longer number one. We were no longer competitive. Secondly, it became clear that the way we were doing things had not produced the desired outcome, so clearly we needed to change, to do things differently.

I think it became compelling when **I said to them: You know, we have one molecular biologist here in Frankfurt. Can you believe that? At many companies, 20% of their biology scientists are molecular biologists. We have one.**

That sort of data became compelling. And I think when I said I'm prepared to let people go back to the university and to cover their salaries and costs, I think people then began to realize that this was not just an issue of reducing the workforce, but of upgrading our skills.

And then he asked the question again. Well, can we do that without reducing people? I replied: I do have a challenge there, because I have a fixed budget. Now, if we are to get young people coming in with these skills, then we need to make room. But I am prepared to have the established scientists retool. But during the two years they are getting new skills, we are losing time and we are losing competitiveness. So we do have to make some room to bring in, in the interim, some new skills.

And I think that's what did it. And I will tell you that Mr. Weber – he's now retired, retired, oh, I think early this year, end of last year – Mr. Weber became, although always looking out for his constituency, I would say a real partner in change. **He was always challenging, but now challenging from a different viewpoint. Not from a viewpoint that believed that we wanted to destroy jobs, etc. But from a viewpoint that focused on what we needed to do to make things better and to preserve jobs simultaneously.** That, of course, was his as well as my challenge.

COS: So what I hear you describing is various ways in which you actually managed to turn your enemies into collaborators.

Frank Douglas: Yes.

COS: And the way, the method I hear you describing is, number one, you focus on what you want to create. I mean, you do not react to issues or attacks.

Frank Douglas: Don't be distracted, is one of my mottoes. Don't be distracted.

COS: Don't be distracted. And, second, you teach the system to see the reality, to observe, observe, observe. So all you do is present the data that you are up against, right?

Frank Douglas: Yes, you present the data.

COS: All you do is go back to the data. And then you have them form their own judgment.

Frank Douglas: Yes, they form their judgment, yes. I do not have to make the critique, I do not have to judge. We operate in a world of competitors. The competitors set the standard, they set the tone. **The question is, are we meeting the standards set by those with whom we compete? That is what the question is.** The question is not are we the best, are we not? Are we good, are we bad? It's are we meeting the standards that have been set? And then are we raising those standards by our performance?

COS: So I hear you describing how you have driven these transformational changes that taught the system to see the reality it is up against.

Frank Douglas: The system has to see the case for action. If the system does not see the case for action, if it's not compelling, it's not going to happen.

COS: And that's all you do, right?

XIII. Putting together platforms of innovation

Frank Douglas: That's what I do upfront. Let me describe one of the major transformations we are having here, namely, the introduction of chemical biology. I gave a presentation in 2000 at the Drug Discovery and Technology Symposium. It was an interesting situation because I was following Craig Venter as keynote speaker. He was really very nice and charitable. At the end of his exciting talk on deciphering the human genome, which the world had just witnessed, he said, Well, you know, there's a lot of work yet to be done, but the guy who really has the tough job of converting this information into drugs is Frank, and he will tell you about it.

I used that opportunity to present something that I had been thinking about actively for about two, three years. I had involved a small number, about four or five, of my colleagues here at that time, Hoechst Marion Roussel. [It was] the notion of what I called chemical biology, some people now call it chemical genomics, and it's exploding. And the notion was very simple. The observation had to do with the fact that in recent years we had spent a lot of energy on increasing the diversity of chemical structures, but had learned little about the structure of the biological targets and the rules that would predict whether we could find druglike compounds against these targets. We needed to bridge this gap in knowledge if we were to improve the productivity in the pharmaceutical industry.

To introduce that within [what was] now the Aventis world, [was] absolutely not easy. Within HMR itself would have been easy, but now it was Aventis. So what I did was, I did the pilot. Again, I made the observation to my colleagues. Look, we have about 50 project teams working on kinases in the three sites. But they're working independently. In fact, if you look at it, we have a community of 250 scientists globally working in kinases, but they're not working together. I'd already introduced notions such as community of practice in HMR. So to talk about community was easy in the HMR world.

So here we have this community. Why don't we bring this community of scientists together in what we will call a chemical biology platform, where we can have the biologists and the chemists and the PK, metabolism people all thinking and working together around kinases. And sharing information and knowledge, etc. And that will increase productivity, which we've now demonstrated. We spent a year struggling with this, because the organization didn't want to do it, etc. And there were lots of naysayers who said it wouldn't happen. I was not distracted. **This is one of the cases where I used a consultant, because the consultant, again, took me out of it and worked with the scientists around processes. I again set criteria and they worked with the scientists on processes.**

A couple of times the consultants came to me and said: This organization is impossible. You can't change anything here. So they came with a recommendation for a big change management program. And I said: Okay, please, please, please, just be patient. By the end of the year I experienced, once more, another one of those defining moments. Nine months later, I was invited to a workshop that was called Protease Workshop. I was actually on vacation. I didn't tell

them that I was definitely planning to attend. They knew I was on vacation. But I decided to show up.

And I sat there and I was amazed. These scientists had gotten together by themselves and were actually implementing chemical biology. And so I sat for three hours or so observing and then they asked for my comments. And I commented on what I had observed. And I said, it strikes me that what you're doing here is basically what we wanted in chemical biology. Do you guys think you're ready? They said yes.

Now we have four chemical biology platforms.

COS: How did that happen?

Frank Douglas: How did it happen? I think, one, we did the pilot with kinases. Now, you need to understand, which is another thing I do, **I believe that organizational change has more to do with mindset than it has to do with structure. And, of course, what people were thinking is [that] if we introduce chemical biology, I'm going to change the structure and instead of having a chemistry department, a structural biology department, for example, I was going to reengineer the company into kinases, proteases, GPCR departments, etc. That was absolutely not my intention. It's more mindset, getting people to work together.**

I think people began to see a couple of things. One, that their jobs really weren't going to change. So that part of the resistance went away. .

Secondly, that I was serious about it. Because another thing that people will do in an organization is wait to see whether this is the just the next flavor of the month and if it'll pass. But I was serious about it.

The third factor is, they began to see successes. They indeed began to see – because one of the things I said is that you have to indeed publicize successes – they began to see successes.

We had developed a book of knowledge as we built the Kinase Chemical Biology pilot.. We wanted to document the things that worked and didn't work. Dr. Hans Peter Nestler, the protease scientist, basically took the book of knowledge and developed a workshop around that to develop a protease chemical biology platform. That to me was probably the best measure of success you can have.

And I will tell you that now 70% of our projects are supported by one of these four chemical biology platforms. And last year, about three-quarters of the lead compounds and early development candidates came from projects that are participating in these platforms.

So, again, it's this type – which you have described and I use your terms – of **putting the hub together, setting the criteria, to determine how we will judge success. Then let it incubate, let it work, make the observations, do the experiment, make the modifications. And then introduce it on a broader scale.** And that I think is the model that, now that you say it, the model that actually I've been using.

COS: So what do you do as a leader, as an executive, to nurture the vitality of a platform or hub?

Frank Douglas: What you do, you do a number of things. First, again, you **select the right people**. And you don't select them, again, based on their having done this before, etc. You select them based on something like this: Is the person entrepreneurial? Is the person a good scientist? Is the person the type of person who will embrace new paradigms? Select them based on that, is one ingredient

Second thing is, I **give it visibility in terms of my interest**, so I review it repeatedly, I also identified Günther Wess, for example (I mention him frequently), as sponsor of the chemical biology effort. So it wasn't my effort. Here's a site head who was the sponsor of this effort. He remains sponsor. I am a sponsor for one of the platforms, so I actually report to him with respect to chemical biology. Again, modeling behavior. And when he holds his meetings, I am just a member. I'm one of the sponsors, I'm there with the platform heads and the other sponsors. He conducts the meetings and I make a contribution along with the other participants. I respect his leadership in this.

So it's that modeling of behavior. Seven, eight months into this, I had a workshop just for kinases in which I did what I call the **goal alignment**. Now that we have the platform, I wanted to have the heads of various projects and the six core members who lead this platform, the six leaders, work together to make sure that for the following year their goals were aligned. So we did a goal alignment.

I then began to implement linking the relevant activities in the organization with the platform, so that a platform is linked to day-to-day work. And it's Günther Wess who best described the **mission of the platform**. And I think he said it very well, very briefly. It is to enable the organization to find better compounds faster. And that's become a catchword. Better compounds faster. So it's very tangible, very clear. And the goals are so aligned to achieve this.

So those are the things that I try to do. One of the things that we have done in the organization [is to] link the platform so it becomes part of the fabric. It's the way we do business, it's not just another initiative. It gets incorporated into the way we do business.

VIV. Project teams as innovation ecosystems

COS: Once you have established these platforms, how do you make sure that they are in communication with one another? How do you align the innovation ecosystem across the whole organization?

Frank Douglas: Well, one of the things which we did, as I mentioned, we changed the name Research & Development to Drug Innovation and Approval. And the reason for that had everything to do with the results of that early assessment I talked about, in answer to the question, are we the best? The question, were we pursuing the right projects? Did we have good compounds, etc.?

And what came out of that is, indeed, [that] our scientists were working on the appropriate projects. But the truth of the matter is, their research was focused more on academic research than it was on drug discovery. People were busy writing papers

The second thing that I discovered was that, yes, we moved compounds into the clinic, but the development plans were not clearly stated, and the execution was very poor. And the people weren't really focused on the clinical studies they needed to do to get an approval.

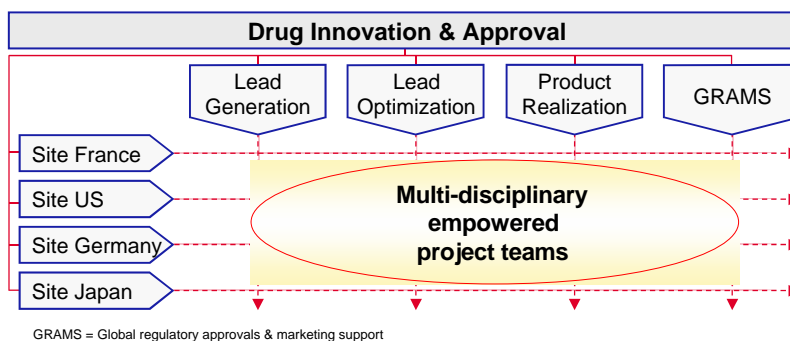
So once, again, one of those bold moves I made, I said: We're going to change the name from Research & Development to Drug Innovation and Approval. That's what we do. We are here to apply research techniques and development techniques to innovate drugs and get them approved and keep them approvable on the market. That then opened up a real change in the thinking, it changed the paradigm.

Further, I asked, Why don't we align the organization that way? Why don't we, instead of having all these various disciplines, why don't we cluster them? Put all of the disciplines that have to do with validating targets and generating leads under one global leadership. And so forth.



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So we realigned the organization and now have Lead Generation, Lead Optimization, and Product Realization.

That, therefore, led us to your question, How do we do this? So the first change was, if you're going to be competitive, you need to have all of this under global leadership. Now, on every site, for example, there is a Chemistry group because you want chemists working very closely with the biologists. And on every site the chemists preferentially work on projects at that site.

However, because Chemistry is under global leadership, if Site A has more compelling projects than Site B, the global head of Chemistry can assign projects from Site A to chemists in Site B. We have to optimize the overall global portfolio. We have, as I mentioned, Lead Generation, Lead Optimization, Product Realization, and GRAMS (Global Regulatory and Marketing Support).

Now, the head of each site manages a portfolio of projects among disease groups. For example, the focus in Germany is cardiovascular, metabolism, and thrombosis. In France, it's oncology and CNS. In the U.S., it's other aspects of CNS, rheumatoid arthritis, multiple sclerosis, and asthma.

As you can see, because of the disease groups, the biologists are specific to the site. Biologists are specific. There are chemists at each site, but they are globally coordinated. Similarly, toxicology is globally coordinated. PK is globally coordinated, but we have PK people assigned to each site.

Here are the individuals who report to me. You know, the head of the site, the head of Lead Generation, head of Lead Optimization, etc. And the job of this team is to optimize the overall global portfolio. The job of the site head is to optimize the site portfolio. This is the local/global tension.

Now, the ecosystem. **Key for us is the project team. And, for us, the project team is the ecosystem. Because within the project team, you have the many disciplines operating and working together.** And we say that a role of the global functions is to provide the best people and the best technical solutions to enable a project team to make its decisions.

So all of the interactions – for example, the customer interface – take place in the project teams. There are commercial representatives in the project team. They do the interaction with the external physician about patient perspective, and they bring that into the project team. We have customers within academia, etc., with whom we collaborate, do different things. Different members of the project team have those interfaces.

So the project team is the innovation ecosystem, which brings together the scientists from the different global functions with the biologist at the site and the commercial interaction. And the local/global issues get played out locally at the site, but since each of these site heads is a member of the global leadership team, responsible for the overall global portfolio, the tradeoffs for resources between projects are made on a global basis.

COS: I see, okay. And who is in charge of these multidisciplinary teams?

Frank Douglas: There are project leaders at the site that are chosen by the site head. Sometimes it depends on the stage of the project. Sometimes the leader is a chemist, sometimes it's a biologist. Sometimes the individual is a toxicologist or a clinician when we get into the clinical phases.

When we get into the later phases, those projects are globally run out of the U.S. from the Global Drug Development Center. Before that they are run by the sites.

Opening up

COS: Now, what I heard you describing regarding the Hoechst part of your story, is that the opening up, getting external scientific reviewers and so on, that was a key intervention.

Frank Douglas: That was a key intervention, and that has become the way in which we do things. In fact, I then introduced for each disease group a three-year cycle of these external reviews. And so, at the end of a review, we basically were saying to that disease group with its portfolio of projects that were approved, you're funded for the next three years. So that's now the standard way in which we do things. Which now is actually self-running. In fact, often I'm not even present at some of these, because now, many of the technical groups, Chemistry, PK, metabolism, etc., are performing periodic reviews with external panels of academicians and experts.

Then what happens is the recommendations are reported to my leadership team, which we call the DIALT (Drug Innovation and Approval Team). The DIALT needs to sign off on these, because they must agree on and authorize resource allocation, etc. But whereas initially I was running each of these they are now all self-running.

XV. Corporate social responsibility

COS: Talking about the global social and environmental context, what role does that play in your work? And also, what role do you see that it may play in the future of innovation?

Frank Douglas: Let's start with some of the challenges we have, and particularly when you're sitting in Frankfurt, you're probably even more aware of those challenges, since one is sitting in Europe. Issues abound – privacy, if you like, and the concern about genetics and what it could bring. We have developed a policy for each of these issues. And you will find in each of those policies that we have review committees involving people external to Aventis. So that having people from the community, the society at large, participate and having a window onto what we're doing as well as giving us feedback is important.

We I guess operate from the basic reality that our scientists are, first of all, not our scientists; they're first of all people who live in a community. And their neighbors ask them questions. They need to be able to say, Here's the policy of the company. Here is how we do business. They need to be able to do that, so we operate from that perspective. So that's one series of issues.

Second series of issues is the whole issue around **sustainable development**. What does that mean? And this is something that's evolving. But certainly a concern that we have is what it is we can do to help the developing world. And so we do things like the vaccines we've donated to help to really stamp out polio or sleeping sickness, which we gave to WHO [the World Health

Organization]. We've recently introduced a program in South Africa in collaboration with the Nelson Mandela Foundation to help with the treatment and control of tuberculosis.

So those become important issues for us, in terms of what it is we can contribute to the community.

COS: In your mission statement, there's an interesting phrase: improving the –

Frank Douglas: – **improving the quality of life of mankind.**

COS: Based on that statement you could potentially take a very active role in shaping the evolving global societal conditions.

Frank Douglas: Yes, but I think we hesitate. I think we have a responsibility. The question is how best do we fulfill it? Certainly, at the Aventis Foundation, that question has been raised. For me, and this is my personal opinion now, I think it is difficult for the pharmaceutical companies to participate in this dialogue, because there is always a suspicion that we're doing things because of the profit motive. And at times I think we just have to be bold and just contribute to the dialogue in spite of the skepticism. At other times, one must ask oneself the question, is this going to be destructive? Will one end up spending so much time defending what one is doing that it takes energy away from important areas where one can actually contribute?

COS: Now, one of the developments I had been seeing is that over the past few years more and more global companies are waking up to the fact that capitalism doesn't work in the Third World, as Bill Gates put it recently. That means, in order to address the most pressing issues globally, there needs to be an active participation of all three sectors – government, global business, and civil society. Is that something that you would share?

Frank Douglas: In my personal view, I share that. We all have to be part of the solution. The combination of the three, namely, as you said, public, private industry, and the society, need to come together to evolve solutions that ensure, one, that innovation and solutions get to the Third World. And two, that companies are enabled to make the income that fuels further innovation, etc. That needs to come together.

COS: Right. In a way, what's needed are the hubs or platforms of innovation. Creating these hubs was the main driver of the innovation process you had been working with. And that type of hub now needs to be developed globally on societal issues.

Frank Douglas: On societal issues, yes. I think that's an appropriate analogy.

XVI. Reconnecting the two streams

COS: My last question comes back to the beginning of your story. You said, when you started, you really had interests in science and art and you didn't know what to do. Listening to your story, it strikes me that your career not only embodies the science part and that part of the story. But in your story as a leader, you created conditions for other people to create. The interplay of these two streams seems to be a basic theme throughout your life.

Frank Douglas: Yeah, I remember back at Ciba-Geigy shortly after I had taken over as head of Research, having a Research Day, something I introduced at Ciba-Geigy. I was asked: How do you see your job? **How do I see my job? And I said then, my job is basically to create an environment in which every individual can fulfill his or her potential.** And the environment within which we work is an environment focused on bringing health care solutions to the patients. So every individual who comes to work and who spends many hours after work thinking about his work has a potential to – has an opportunity to realize his or her potential in making that contribution. My job is to create the environment in which that happens.

Now, in order to do that, you have to do the two things. You have to make the tough decisions or create systems that enable you to make the tough decisions, based on the available scientific knowledge, based on the technology. You have to answer the question, **What are the areas that we ought to be researching and developing in order to make a contribution?**

So that one part of it has everything to do with science, technology, and rigorous evaluation. **The second part has to do with how you create an environment in which people want to come to work. And what does it mean? That they're comfortable in that environment? No. It is an environment that answers for them the question, why am I coming to work? And, secondly, now that I know why I'm coming to work, how do I work and how do we work together to make the why I come to work meaningful? That's the arty part of leadership.**

And you introduce things. Then you bring the rigor in measuring the outcome. So at the end of the day, there's always that rigorous part. Even in the arty part, if you make an intervention, you have to be able to measure the outcome. **And that perhaps is what is in a way different between working in industry and being an academic. For us in industry, it is not only important to have throughput; output is extremely important. And so metrics become important.**

And so I think in a way that's what I do. I think I have a sense of what are the meaningful things to measure. You can measure lots of things. But what are the meaningful things to measure? And having a sense of what's meaningful to measure, you begin to get a sense, then, of, in the arty way, what other things then should be introduced. **Because, in a real sense, if you can't measure the output and the impact of something, you may as well not introduce it.** That's one practical aspect of all of this. And so I often start there.

XVII. Leadership as collective artform

COS: It strikes me that leadership, as you have described it throughout the conversation, can be viewed as a collective artform of the present. You create conditions for a group or system to create collectively.

Frank Douglas: Yes, you can say that. As I say to close friends: Enjoy the mystery of your life, and that includes innovating at work.