"Continuing the voyage, expanding the fleet"

2015 Presidential Address

by Jürgen Strohhecker

July 21, 2015 – Cambridge, Massachusetts

Dear Colleagues, dear Friends, dear Fellow System Dynamicists,

Thank you for allowing me to serve as this year's President of the – of our – System Dynamics Society. It is a great honour and privilege to speak to you today. In my childhood, we often visited my grandmother in a tiny village in Baden-Württemberg, in the South West of Germany. In the one and only telephone booth in town there was a small sign, saying: "Nimm Rücksicht auf Wartende. Fasse dich kurz!", which translates into "Be respectful of people who are waiting in line. Make it brief!" I know that you are waiting to go to the banquet, and I promise to take heed of the old German telephone box slogan.

22 years ago I attended my very first System Dynamics Conference in Cancun, Mexico. I had just started my doctoral project, supervised by Professor Peter Milling. He was the Society's president in that year and was standing where I am now standing. I was awestruck and never had imagined that I would do today what he did back then. Another detail that I will never forget is the pre-conference boat trip to the Isla Mujeres. It was a wonderful experience, except that on our return voyage, the waves grew higher and the many ups and downs made me seasick – the first time in my life. Despite that, that memory, let me invite you to continue the voyage that David Lane, President in 2011, started in his address. I promise you: it is just a metaphor. You will not become seasick. Your dinner is not in danger.

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David invited us to see the System Dynamics Society and the field of System Dynamics as a ship on its voyage towards a very ambitious goal. I want you to keep seeing the Society as a ship; perhaps think of it as the romantic paddle steamer "*De Majesteit*", where we enjoyed a wonderful dinner at last year's conference in Delft. However, I suggest adding some more ships, bigger ones and smaller ones, and a lot of very tiny ones. Together with the "*De Majesteit*", this whole fleet represents the field of System Dynamics.

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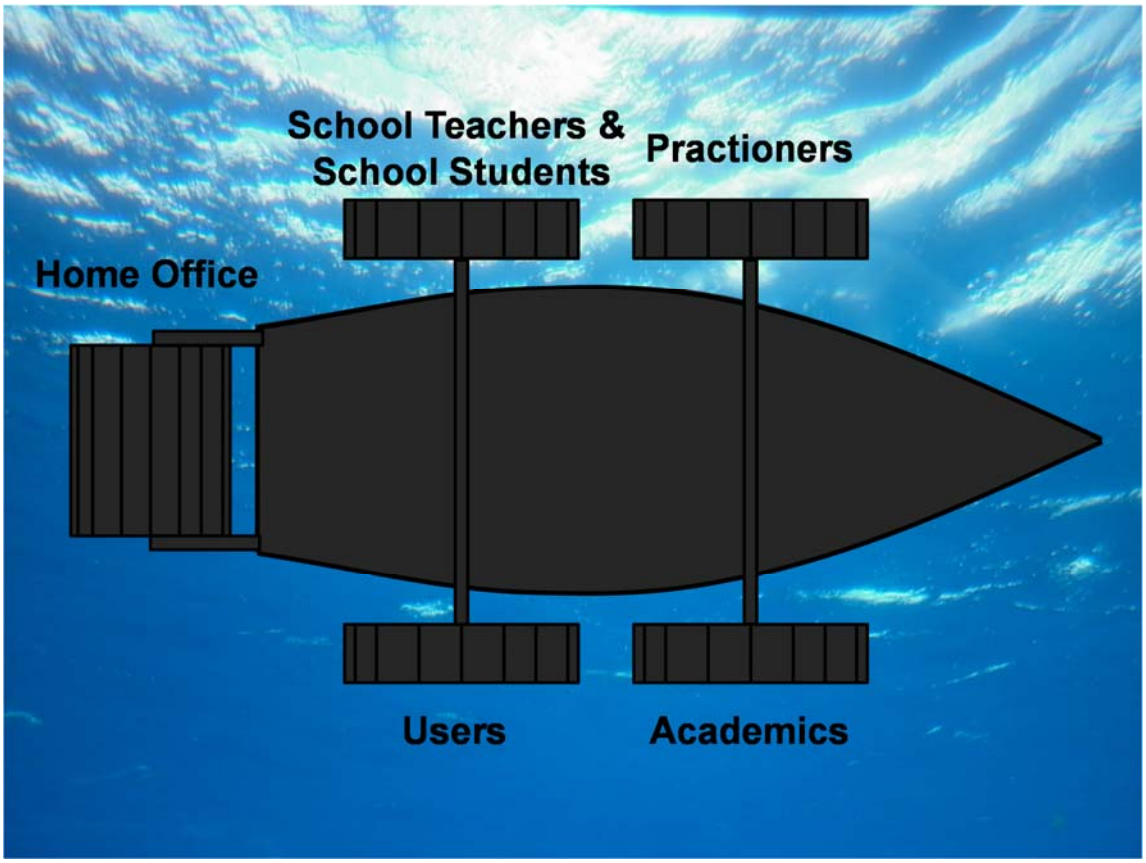
What does this fleet do? Well, it cruises and it goes fishing. Of course, it does not literally catch real fish. In my metaphor, it cruises on an ocean of problems of all kinds – societal problems, political problems, economic problems, sustainability problems, medical problems, environmental problems, and so on, and so on. The System Dynamics fleet is focused on catching the dynamic problems, the problems with feedbacks and delays, the problems with short- versus long-term tradeoffs. It gets these problems on board, solves them and – by this – makes its customers happy and the world a better place. In case a problem cannot be solved, it has to be thrown back into the ocean, where it swims around and waits to be caught by other fleets – perhaps by the discrete event simulation fleet or the linear programming fleet. Sometimes, problems cannot be solved completely, and then the leftovers go back into the ocean and – in the

best case – dissolve. Sometimes, however, they re-grow and become big again, perhaps even bigger than they originally had been.

Now, let us focus on the "*De Majesteit*", our ship, The System Dynamics Society. It is a wonderful ship and a very special one as well. It does not catch fish –, I mean problems. It has no nets, no rods or lines. It gives fishermen and fisherwomen as well as customers – that is, System Dynamicists, a conceptual and intellectual home. It allows them to exchange ideas, thoughts and knowledge, through venues like this very conference. It facilitates coordination, and it gives direction to the whole fleet.



The figure above shows our ship from below the water surface. It has not only one or two paddle wheels; it has at least five wheels that are driven by different engines. We are lucky enough to have a professional staff on board – our Home Office – that diligently and devotedly crews the ship all year round. The other paddle wheels are operated by different groups of

volunteering System Dynamicists. We have school teachers and students on board, practitioners, academics, and, last but definitively not least, users of System Dynamics, customers. These groups of people within our Society are of different sizes. And, as they consist of volunteers, their paddle wheel power naturally varies in intensity over time.

Since 2013, our ship carries an ambitious, "official" vision for the whole fleet, the field of System Dynamics. This vision was crafted by 2013 President Kim Warren; it is supported by our Society's Policy Council; and it embraces suggestions made by some of my predecessors in their Presidential Addresses. I do not want to read our vision aloud for you. The vision can be easily found on our website. I rather want to translate it into my metaphor as follows:

The System Dynamics fleet is one of the largest fleets on the ocean of problems. It substantially contributes to cleaning the ocean of dynamic problems, that is, to making the problem-owners happy and the world a better place. This is widely known and acknowledged, and, therefore, demand is high. Our fleet is recognized and respected by other fleets. Becoming part of our fleet is highly attractive. We have a strong crew-training process and a well-filled pipeline of prospective System Dynamicists.

If you think that this vision for growth along multiple dimensions is too far-reaching and unrealistic, please read Kim's 2013 presidential address; I hope that you will then agree with me that this vision is far from being alien. It sets challenging targets, but it is achievable, and I think that we have made progress in the last years towards it. Although a long way is still ahead of us. More growth is required. Specifically, we need to attract and admit additional boats, so that our fleet grows in size. We also need to increase the size of the boats to carry more System Dynamicists. Moreover, we want to grow our own ship, the System Dynamics Society.

How do we achieve this growth? I think that we already know how quite well. It is one of the most deeply studied problems in our field. And we

started studying it early. Jay Forrester, the founder of our field, identified as early as 1961 the study of corporate growth as “a most exciting use of industrial dynamics”. A few years later, he published the article “Market growth as influenced by capital investment” and showed that growth can be severely hampered by inadequate capital investment policies. This shows that from the very beginning, System Dynamicists did include the limits to growth in their analyses – not only in the identically named study that made massive waves in the early 1970s. These waves can still be felt today. We have taken up the new product growth model that Frank Bass published in 1969 and produced and analyzed a vast number of crucial extensions. We have John Sterman’s textbook “Business Dynamics” that shows no less than 35 potential engines of corporate growth in chapter 10.4. Finally, we have models of our field. Examples include the model that George Richardson presented last year in Delft, or a draft version of a more comprehensive model, which Kim Warren is developing in his function as head of the Strategy Committee. Based on this knowledge, the last years have seen the crafting of a strategy that now guides the voyage and development of our “De Majesteit” and that influences – hopefully – the voyage of the whole fleet. While strategy was in the focus of many of my predecessors, it was President Erling Moxnes, who deserves credit for formalizing the strategy development process by appointing the strategy committee in 2009. Since then, thanks to the many people being engaged in the strategy process, significant progress has been made.

We have identified an impressive list of, currently, 19 strategic initiatives – many thanks to the Society Officers and members who were engaged and have carried them forward. It is impossible to mention all of these initiatives now, let alone explain them in a decent way. I do not want to endanger my promise to be respectful of people waiting for dinner. Therefore, I have to restrict myself to just a few examples. (For a more comprehensive overview, go to the Governance section of the Society’s web page to download the full strategy report.)

Being well aware of the word-of-mouth growth engine, we know that doing good work, spotting and solving a lot of problems, is important. Customers, users of System Dynamics, come because they see that others like our fish. True. But they will come in even bigger numbers if we advertise our products, if we are like fisherpeople and brag about our catch – of course without telling "fish tales". We have a diverse set of channels available – academic journals, managerial journals, practitioner journals, newspapers, magazines, books, websites, social media, television, films, radio, podcasts, and so on. I know that there are examples of usage of all of these channels – sometimes a nearly countless number of examples, sometimes only very few. I also feel that we have improved in recent years, especially in using social media. (Have you ever visited the System Dynamics Society Facebook page? You should do so! It definitively deserves a like.) However, there is still potential for improvement. Therefore, "raising public visibility" is one of the society's strategic initiatives; "developing a greater presence in social media" is another, and "elaboration of a publications strategy" is a third one. But, please, do not hesitate to use what we have already in place. Send your news to the Home Office to be published on the Society's homepage, and keep yourself informed by regularly browsing through it. Submit your System Dynamics cases to cases.systemdynamics.org and learn from what is already there.

While positive word of mouth supports growth, negative word of mouth naturally decreases the fleet's attractiveness. It hampers growth and might even reverse virtuous growth engines into vicious cycles. It is really important that we do good work. But how do we know that it is good? In a more general sense: How do we know what good work is? Well, we do have a lot of resources that provide guidance: excellent textbooks, outstanding programs, very good courses, examples of superb System Dynamics work, competent people, and experienced teachers. In academia, the peer-review system serves as an instrument of quality control. Surely, it falls far short of working perfectly, but it does help to

increase the average quality of articles and reduces the risk that sources of negative word of mouth get published. Similarly, in bigger model-based projects, often funded with public money, there is frequently a requirement to include an independent peer-review stage to decrease the likelihood of bad model quality. Good System Dynamics work is not easy to accomplish. System Dynamics is not an easy approach. In 2007, in his speech celebrating the 50th anniversary of the field, Jay Forrester pointed out "System dynamics is a more difficult profession than engineering or medicine."

If this is true, then we should follow societies in engineering or medicine and develop a system of professional certification. We also should think about model certification. I feel that we should do everything we can possibly do to reduce the risk of negative word of mouth and to strengthen positive word of mouth. Some might argue that certification carries the danger of dividing the fleet when we should instead pool all the forces that we can get our hands on. However, I think that we should

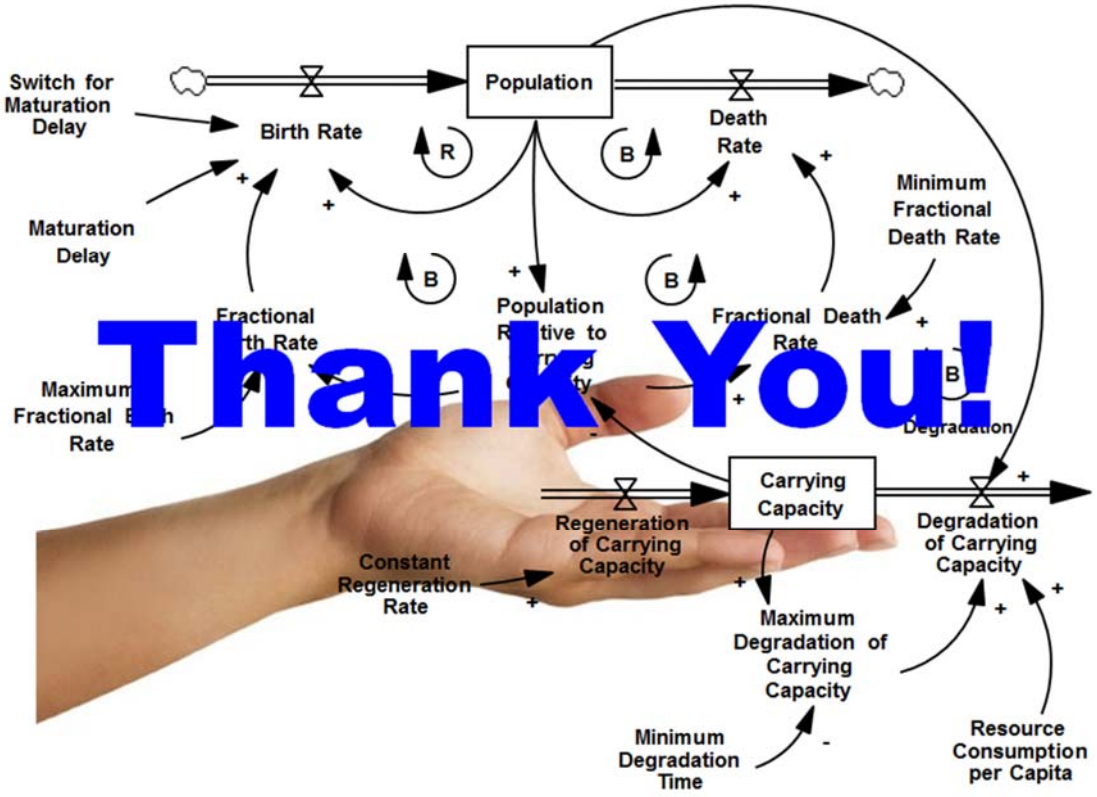
have more confidence in the positive effects that quality labels can achieve. They increase transparency, they facilitate customers' purchase decisions, and they stimulate improvements. We started to think about certification a while back. We discussed it from various angles and debated pros and cons. Certification made it onto the list of the Society's active strategic initiatives. Now, let us go ahead, let us take action and let us implement this initiative.

Another lever towards ensuring good work is being developed by Vice President Professional Practice, Ken Cooper, with the strategic initiative "Commercial-Academic Partnership (CAP) Program". Using that lever is inspired by the obvious fact that a growing fleet of growing ships needs more personnel, specifically more highly skilled fisherpeople. To improve the System Dynamics practitioner pipeline, the program intends to match top System Dynamics students with top professional practitioners. Some of the best new students receive a multi-month mentoring and training internship at firms engaged in the commercial practice of System Dynamics. As proposed, the students will have two tasks to achieve. First, they will work on a focused and explicit project including all the typical stages of a System Dynamics study. Second, they will write up two cases about high-impact applications of System Dynamics at those firms that are no longer sensitive or confidential. Finally, in the academic component of the program, students will work through an organized course of study. Many aspects of this program are still to be worked out. It is planned to pilot the program in the very near future. Based on the experience collected with the pilot, a larger and more substantial program will be crafted.

These few examples provide some insight into our strategy for the field. They show that we have already started implementation – and sincere thanks to everyone who has worked on them. Nevertheless, here, in implementing our strategy lies another huge challenge. It is well-known in the strategic management domain that strategy implementation is hard

work and that success is not guaranteed. On the contrary, dauntingly high failure rates are reported. Compared to military fleets, we have the seeming disadvantage that in our fleet, we cannot simply command that strategy be executed. We have to rely on our ability to position the Society "De Majesteit" as the accepted lead ship, to implement our strategy by influencing and convincing the other boats. Even on board, strategy execution is not a matter of command and control. This is not really a disadvantage; rather, it is a strength. The large number of volunteers paddling enthusiastically do not wait for orders in military-style fashion. They would walk away if treated as a common sailor – and rightly so. Strategy implementation on a boat like ours requires creating an atmosphere of participation, motivation and engagement. As Edward Anderson pointed out last year in Delft, we need to foster volunteerism, not discourage it. We need everyone's individual effort. That said, sometimes we can make even more progress by outsourcing some of our work to external service providers, or redistribute some of it from the shoulders of volunteers to additional (and I really emphasize "additional") professional employees. Of course, this would require increasing the Society's cash flow. With more funds at hand, we could increase investments in the implementation of our growth strategy. Not surprisingly, we find this also as a strategic initiative on our list. If you have any idea, any suggestion, on how to tap new financial resources, I am sure that our Vice President Finance, David Andersen, would be very happy to talk to you.

Ladies and gentlemen, fisherwomen, fishermen and customers, co-paddlers and passengers, this is our fleet and our ship "De Majesteit" that we, the Society members, are very proud to be part of. Join the fleet if you are not yet part of it. Come on board if you not yet have joined the Society. I can assure you: The risk of seasickness is minimal. Last year in Delft on the ship, I was perfectly fine. Take action. Let us paddle, let us go fishing and – let us brag about the catch that we haul in together.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Degradation of Carrying Capacity
Constant Regeneration Rate
Maximum Degradation of Carrying Capacity
Minimum Degradation Time
Resource Consumption per Capita