



Dynamic Walking III

Principles and Concepts of Legged Locomotion (incl. bipedal)

www.dynamicwalking.ax

How Do People, Robots and Cartoon Characters Walk?

Over 50 scientists from 14 countries are going to work on answering that question at a meeting in Mariehamn. The meeting will take place the week of 24-30 June at the Höskolan på Åland and includes public lectures at the Parliament building.

Scientists from North America, Russia, Turkey, Japan, Italy and 7 other European countries are going to spend 5 days listening to each other's theories and experiments about walking. "Most everyone knows how to walk" says Andy Ruina, the meeting organizer and long time Åland summer resident, "but no-one seems to know how they do it. We can see the motions and even record them, but we don't know what rules people and animals use to trigger their muscles." In the winters Ruina teaches engineering at Cornell University in New York.

This is the third meeting of a loose international organization called "Dynamic Walking" and it came to be Ruina's turn to organize. "I said 'OK'" Ruina explains. "Then I realized it would be a chance to show off this great island" he continues. I warned people that it would be a difficult trip, but they were upbeat about it. Especially the Northern Europeans who had to trudge to the desolate middle of Michigan for the previous meeting of the group.

Professor Herr is giving one of the public lectures

Many who are attending will spend long hours to get to the meeting. Professor Hugh Herr from Cambridge, USA will spend a total of about 60 hours in transit to attend just the first two days of the meeting. Professor Herr is himself a double amputee and will be showing off his new design for a powered prosthetic foot. Professor Herr is giving one of the public lectures at the Parliament building on Monday 25 June at 6:30. The title of his lecture is "Human Augmentation: New Minds, New Bodies, New Identities". Herr will demonstrate the world's first powered ankle with board, battery, motor, springs, packaged on the prosthesis. He is founder of The Herr Institute for Human Rehabilitation, and is a professor at MIT and a lecturer at the Harvard Medical School.



Professor Hugh Herr from MIT and Harvard explains the workings of the computerized prosthetic foot that he designed. He will talk about this foot and other artificial human augmentation at a public lecture on Monday 25 June at 7:00 pm in the Parliament building. Admission is 10 euro.



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**R. McNeill Alexander, fellow of the Royal Society
How Dinosaurs Moved**

Another public lecture the same night will be given by R. McNeill Alexander from the University of Leeds in England. Alexander is a Fellow of the Royal Society of London. Alexander has written over a dozen books and is the author of an award winning video CD called "How Animals Move". His lecture in Mariehamn is called "How Dinosaurs Moved". Alexander explains "Simple ideas from engineering help us to work out how giant dinosaurs probably moved." Ruina says "Neill is almost the creator of the general field of study that the meeting encompasses."

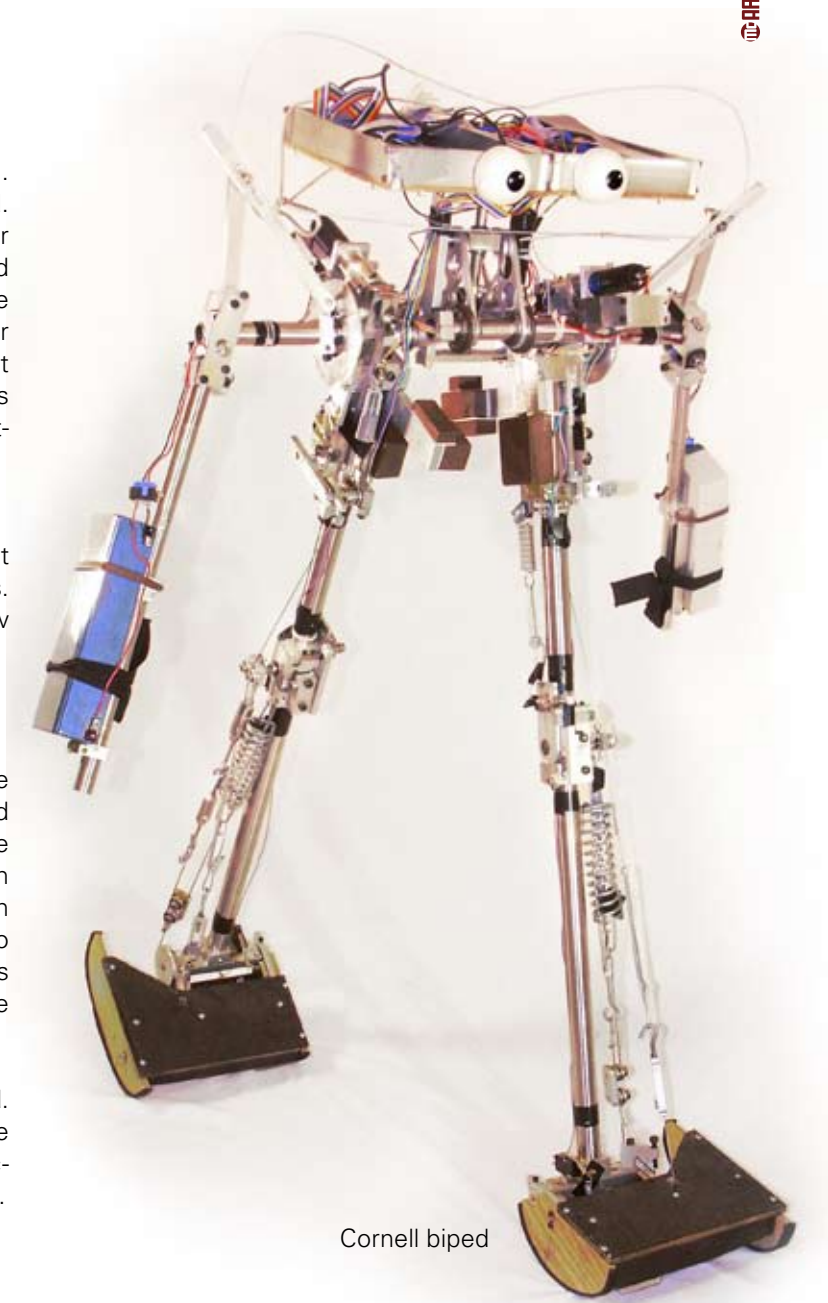
Demonstrations of one or more walking robots

The public lectures in the Parliament building on Monday night will also include demonstrations of one or more walking robots. "So far these gadgets are not so obedient and its not clear how many will actually do anything" says Ruina "we'll see."

There is a 10 euro fee for the public lectures and robot demonstrations

Given the apparently narrow topic, walking, the talks at the meeting will be wide ranging. A few groups from Holland will discuss their walking robots. Alexander will address the question "Do animals optimize?" Three attendees will explain their research on computer animation of walking. Leon van Noorden from Belgium will talk about how people walk to music. Several speakers are interested in human disabilities and disease. And two speakers from the USA will discuss the spring in the step of walking birds.

The main meeting will take place at the Högskolan på Åland. People who are really interested can listen in on some of the talks. The meeting program is posted at <http://www.dynamic-walking.ax/>. Åland Polytech is one of the meeting sponsors.



Cornell biped



Dribble was made by the group of Stefano Stramigioli at University of Twente, in Holland. It is a 4-leg "biped".



Alexander explains "Simple ideas from engineering help us to work out how giant dinosaurs probably moved."

We want to show the participants the nicest aspects of Åland

“While they are here” says Mårten Fröjdö of McArena in Mariehamn who is organizing the logistics of the meeting with Johan Sjölund of WellComing, “we want to show the participants the nicest aspects of Åland.” Fröjdö is hoping to expose the group to a variety of local restaurants, a sailing ship ride, a late-night summer-twilight barbeque and the general peaceful and pleasant atmosphere of the Island. Meanwhile Johan Sjölund has designed the conference web sight at <http://www.dynamicwalking.ax/> and is helping the participants with their travel to Åland and their tourism before and after the meeting. “Despite all the time it takes to get here” says Sjölund “the conference people seem excited about the visit.”

Postage stamp

Carina Sommarström, also of McArena, has designed a special international Åland postage stamp for the meeting that will be given to the participants as a little surprise gift. “If you run into a participant” requests Ruina “don’t tell them about the stamp.”



Trampofoil special lecture by Alexander Sahlin

Another special lecture will be given by Alexander Sahlin of Stockholm. Sahlin is the inventor of the Trampofoil. The Trampofoil is a hydrofoil (a boat supported by a wing that is underwater) that is powered by a person jumping up and down.

“Its legged locomotion too” says Ruina “and the invention is just too smart.”

Sahlin is planning to breake the world speedrecord on Åland

Sahlin is also designing a sailboat that he hopes will go faster than any sailboat ever before; he is aiming for 50 knots and is planning of breaking the world speedrecord on Åland. Sahlin, who is bringing his 2 daughters with him to Åland, will explain both his leg-powered and wind-powered boat designs. “I actually own a Trampofoil” says Ruina “I once kept it flying for 42 seconds. Alexander once went an hour.” Pär Löthman is planning to jump from Nådendal to Grisslehamn on a trampofoil later this summer. A Trampofoil demonstration is planned for wednesday afternoon 27 june at Pensionat Solhem.

“I have been stuck on this Island for 10 summers” says Ruina, whose wife Saskya van Nouhuys studies the Cinxia butterflies of Åland through a Universty of Helsinki research project. “Stuck isn’t really the right word. I love it here. I feel lucky to be able to share this great place with my colleagues from around the world.” Ruina says he hopes that the participants remember this meeting as one of the great intellectual experiences of their lives. “And most pleasurable too” Fröjdö adds.



Andy Ruina, looking forward to his 10th summer on Åland



Alexander Sahlin will demonstrate trampofoil and present his 50+ knots speedsailing project.