OPERA
MECATRONICA

PHOTO: ELIAS LINÉN
Possente Spirto

In this aria from Monteverdi’s opera, whilst the unhallowed souls are swimming back and forth in the river Styx, Orpheus tries to soften the hearts of the Underworld Gods with his song and in doing so bringing Euridice back from the valley of death. Possente Spirto is comprised of computer-animated dancers and processed video dance. The first showing was on Webstage, Scen- och Sinnesproduktions Internet based stage, as early as in 1998. The animated dancers were created in the computer-program “Motographicon” – a tool developed by Peter Rajka and Magnus Lundin in the 1990’s within the KACOR-project which was housed by KTH, The Royal Institute of Technology in Stockholm. In the late phases of the KACOR-project, Åsa Unander-Scharin was part of it to evaluate choreographic applications of Motographicon, and to write a user’s guide. The video clips were rendered during night-shifts on KTH’s powerful Silicon Graphics workstation “IRIS Indigo”, and during daytime put together on a Mac Quadra 610.

In may 1998, Webstage (www.speech.kth.se/Unander.Scharin) was appointed “link of the week” by Kulturnät Sverige.

Possente Spirto is shown on a period Panasonic TV from 1997.

Video-Choreography: Åsa Unander-Scharin
Dancer: Petra Fredrikzon
Music: Claudio Monteverdi (from L’Orfeo, 1607)
Video recording: Tomaz Blanc
Musical performance: Ensemble Fortezza (Carl Unander-Scharin/Tenor, Keren Bruce/Viola da Gamba, Kerstin Frödin/Recorders, Urban Westerlund/Organ)
Remix: Klas B Wahl

Scen- och Sinnesproduktion, in cooperation with The Royal Institute of Technology and SAMI.
The puppet Olimpia’s virtuoso coloratura aria is performed by a giant electro mechanically choreographed marionette built from highly patinated scrap machine parts. The music is ‘coloratura’ in its original sense – coloured or embellished – and implies a re-colouring of Offenbach’s aria from “The tales of Hoffmann”. The choreography is both a response to Heinrich Kleist’s homage to the marionette (1810), ‘the most graceful of all dancers whose non self conscious movements simply obey the realm of purely mechanical forces’, and yet at the same time it is a staging of an anorexic yearning for a body without skin, flesh or psyche.

The marionette consists of nine body parts connected – via a string system – to 15 computer directed servo engines, attached to an aluminium frame in the ceiling. Marionette height 300 cm. Frame 240x240 cm².

Concept, choreography and movement programming: Åsa Unander-Scharin
Puppet maker, electronics and software: Magnus Lundin
Aria: Jaques Offenbach (from Les racontes d'Hoffmann, 1881)
Singer: Jeanette Bjurling (recording: Lars-Göran Ehn)
Music: Carl Unander-Scharin
Light design: Anders Larsson

First performance in the Reactor hall at The Royal Institute of Technology in Stockholm, 2010
Produced by Scen- och Sinnesproduktion, financial support by Långmanska kulturfonden and the Swedish Arts Grants Committee.
Robocygne

This trembling black robot swan which sometimes moves smoothly and gently, sometimes in a dramatic and fiery manner to Tchaikovsky’s majestic music is inspired by Edgar Degas’ sculpture The little fourteen year old dancer (1881), and is made from wax, bobbinet and silk ribbon. This birdlike body vibrates with electronic life and has the unattainable dream of dancing as prima ballerina on a grand stage. The music is a re-modelling of Rothbart’s theme from the Swan lake where both the ocean and the orchestra have been caressed and yet at the same time smacked by music technology.

The dance has been created by a hands-on process where the robot body parts have been manipulated one by one to the music by the choreographer, in four recordings. The body consists of two light metal wings embellished with black feathers, a torso of aluminium, black bobbinet and circuit cards, a vertically adjustable leg, a very flexible neck together with a beak made of eight servo engines. Height 130 cm. Wingspan 160 cm.

Choreography and movement recording: Åsa Unander-Scharin
Music: Pjotr Tchaikovsky (from The Swan lake, 1877)
   / Carl Unander-Scharin
Robot construction and software development: Prof. Lars Asplund and Alexander Larsson, School of Innovation, Design and Engineering at Mälardalen University (MDH)
Project managing: Lars Asplund and Kerstin Gauffin (MDH)
Production: Mälardalen University

First performance at the Swedish Book Fair in Gothenburg, 2010
The music has been developed through Scen- och Sinnesproduktion’s financial support from the Swedish Arts Grants Committee
Ombra mai fù

This sensual tree, built of copper, reacts on the closeness of the audience. When the audience approach, the tree performs the Largo by Handel with its trembling loudspeaker-leaves. In this aria, Xerxes gives voice to his love for a tree that allows him to seek refuge in its shadow.

Through the stem of the copper-tree, wires are led from the base to brass-leaves that tremble by the sound waves. Two sensors are placed on the stem, and through the computers and circuit cards placed in the root system they transform the movements of the audience to music, wind and light.

Idea and intonation: Åsa and Carl Unander-Scharin
Construction of the copper tree, and technician: Petra Kiiskinen
Aria: Georg Friederich Handel (from Xerxes, 1738)
Remix, song, electronics, programming: Carl Unander-Scharin
Idea- and electronics consulting: Magnus Lundin
Light design: Anders Larsson

World premiere during the inauguration of Piteå Acusticum in 2007. Has been exhibited in the foyer of GöteborgsOperan.

Scen- och Sinnesproduktion, with support from The Swedish Arts Council and The Swedish Arts Grants committee.
The Pearl Fishers

This version of Bizet's Pearl Fishers duet is dependent on audience interaction. An image of a dancer is projected on the bottom of a water tub of stainless steel. By touching the water the audience evokes the music and the dance, frame by frame, resembling the chronophotographic imagery of Eadweard Muybridge.

The installation consists of a tub of stainless steel (90*110*12 cm), 15 litres of water, a white Plexiglas board, microphones, projector, computer and loudspeakers.

Dance and Video: Åsa Unander-Scharin
Interaction design and programming:
Mateusz Herczka in cooperation with Åsa and Carl Unander-Scharin
Music: Georges Bizet (from Les Pêcheurs de Perles, 1863)
/Remix: Carl Unander-Scharin
Singers: Karl-Magnus Fredriksson and Carl Unander-Scharin
Construction of the steel tub: Markus Lundblad
Costume: Mylla Ek

Scen- och Sinnesproduktion, with support by the committee for Artistic development at the University College of Dance, and The Swedish Arts Grants Committee.
Petrushka’s Cry

An electro mechanical miniature version of a scene from the ballet Petrushka originally choreographed by Michel Fokine for the Russian Ballet in Paris 1911 to music by Igor Stravinsky. Like an organ grinder it is the audience that initiates the ballerina’s circular movement, while the Petrushka puppet performs his lovingly animated dance. When the crank handle stops Petrushka’s body ceases to interact due to gravity, and he slumps, inactive, resigned to his fate.

Petrushka’s computer directed body (70 cm) is built from aluminium and Plexiglas plates, plastic pipes, a paper ball head, a spine of wood balls, wires, pipe-cleaners, seven servo engines, circuit cards, cables, screws and nuts. The mechanical ballerina body (75 cm) is a combination of metal poles, springs, a CD-disc, bobbinet, a gilt door bud and a watch head. The two puppets are placed on a velvet box (50x80x90cm³) that contains the grind mechanics, a water pump, a computer, electronics and loud speakers.

Choreography and movement programming: Åsa Unander-Scharin
Puppet maker and software: Magnus Lundin
Mechanics and stage design: Åsa Unander-Scharin, Petra Kiiskinen, Erik Persson
Music: Carl Unander-Scharin

Scen- och Sinnesproduktion financial supported by Swedish Arts Grants Committee, the Swedish Arts Council and The region of Stockholm
The Lamentations of Orpheus

Solo choreography for an orange industrial robot to Monteverdi’s aria from L’Orfeo in which Orpheus sings out his sorrow over Euridice’s death, vowing to descend to the underworld to bring her back to earth. This 170 cm high and 500 kg heavy robot consists of three segments, three joints and a grip. The robot movements are choreographed in the Swedish computer program Motographicon.

Below the first 20 seconds of the choreography, where the Motographicon code is translated to the ABB-robot code.

MOTOGRAPHICON SCRIPT
(TIME 100)
(bodyturn (r 0)(d 50))
(rwrist (r 0)(v 0)(d 50))
(RELBOW (R 0) (D 50))
(RARM (V 90) (D 50))
(WAIST (V 0) (D 50))
(time 700)
(rarm (v 155)(d 750))
(time 1450)
(rarm (V 0)(D 100))
(time 1550)
(bodyturn (dr 170)(d 750))
(RARM (V 155) (D 750))

ABB ROBOT CODE
WaitTime DT(1.0);
MoveAbsJ [[0,0,0,0,0,0],ep], vmax \T:=DT(1.5), fine, tool0;
WaitTime DT(7.0);
MoveAbsJ [[0,-60,0,0,0,0],ep], vmax \T:=DT(14.5), tz, tool0;
MoveAbsJ [[0,0,65,0,0,0],ep], vmax \T:=DT(15.5), tz, tool0;
MoveAbsJ[[-110,-45,-55,0,0,0],ep],
vmax \T:=DT(20.0), tz, tool0

Choreography and movement programming: Åsa Unander-Scharin
Music: Claudio Monteverdi (from L’Orfeo, 1607)
Dancer: ABB Robot IRB 1400
Software conversion program: Magnus Lundin
Music recording: Ensemble Fortezza
(Carl Unander-Scharin/tenor, Keren Bruce/viola da gamba, Kerstin Frödin/recorder, Urban Westerlund/organ), Åsa Unander-Scharin, Petra Kiiskinen, Erik Persson
Video photographer and light design: Mateusz Herczka

Scen- och Sinnesproduktion in collaboration with The Dance Museum and Asea Brown Bovery, with financial support for the music recording from SAMI

This is the Nucleus

The MIDI-Harp or Vocal Chorder is a specially constructed instrument consisting of nine wires running from ceiling to floor. The work and the instrument were constructed when Carl was Artist in Residence at Den Anden Opera in Copenhagen, during March 2004. Carl had a vision of an interactive interface that would allow him to create accompaniment with the body, to make it possible for an opera singer to step outside the prevalent hierarchic structure of the operatic art. The singer/interactor plays the vocal harp by stretching, pulling, leaning on and manipulating the wires which in turn both controls the accompaniment and the blue pyramid floating on a black wall outside the installation. The MIDI-Harp/Vocal Chorder has been developed in several different versions, where audience and performers can play the instrument in various ways.

Idea, programming, electronics, music and voice: Carl Unander-Scharin
Sensory intonation: Carl and Åsa Unander-Scharin
Text: Walt Whitman (from I sing the Body Electric!, 1855)
Construction of the MIDI-Harp: Stefan Knudsen
(En Anden Opera, Copenhagen)

Corpus aquarium

A dancer clothed in green hovers in a box of glass, sized 180*60 cm. The film that is projected on the box is reflected in the glass walls, and the fleeting movements of the green dancer are reiterated on the floor outside the box.

In the background the sound of a choir is heard singing prolonged and stretched. On the roof of the box sits a shining blue marble. By rolling the marble, the audience can enter the other rooms of the box, the loops of other dancers and colours. The movements of the marble remixes the images and the rubbing of the fingers causes the limbs to float apart, turn upside-down, and exchange places with each other.

The faster the movement of the marble, the more the bodies of the dancers are transformed into graphical fragments that create patterns where the dancing body is no longer discernible.

Idea, choreography and video: Åsa Unander-Scharin
Interaction design and programming: Mateusz Herczka in cooperation with Åsa and Carl Unander-Scharin
Music: Carl Unander-Scharin
Dancers: Jennie Lindström, Charlotta Ruth, Petra Wormbs and Åsa Unander-Scharin
Costumes: Gerhard Aroyan, Mylla Ek and Åsa Unander-Scharin
Construction of the glass box: Magnus Lundblad.

First performance: Malmö Konsthall, 2004. In the autumn of 2009, the Dance Museum of Stockholm acquired Corpus Aquaria to the permanent exhibition, where it is on display during the opening hours. www.dansmuseet.se
In 1999 **Orfeus klagan** received an Honorary mention from VIDA 2.0/Fundación Telefónica Art & Artificial Life International Competition with the motovation: "An installation whose compelling aesthetic relies on the sophistication of its principal element, an industrial robot whose choreographed movement are attuned to music from Monteverdis L’Orfeo. A beautifullyexecuted metaphor for a-life, that really does capture our human projections on to machines in an exquisite way. The robot is not autonomous in its environment, in fact it is very visibly controlled and so it makes an ironic twist on a familiar cultural interdependence between choreographer and dancer. It implies an interesting relational equality between human and robot, so although as an image it reminds of the famous pixar luxor lamp, it acquires its lifelikeness in a more subtle way.”

In 2006 **Petrushka’s Cry** received the Premio del Publico in VIDA 9.0 and was invited to ARCO International Art Fair in Madrid 2007 with the motivation: “Attributing emotions to inorganic beings is an archaic human ploy seen in the long history of puppets and effigies. The story of Petrouchka’s unrequited love for the Ballerina transfers this ancient fantasy to the realm of today’s interactive automata. In Asa Unander-Scharin’s installation, the audience literally winds up the Ballerina with a crank handle, and her pirouetting vertical figure releases magnetic signals that drive Petrouchka’s computerchoreographed movements and his falling tears, while controlling the electroacoustic remix of Stravinsky’s piano score. The Motographicon choreographic processing programme, of which the artist is a co-developer, is subtly used to maximise the affective qualities of Petrouchka's gestures: he reaches out to the ballerina, straightens up hopefully, then sighs and slumps, resigned to his limits. The puppet has been built to allow these emotionally communicative postures to be emphasised, through fine adjustments of spine, head and arm movements. Whereas puppets described in Heinrich Von Kleist's famous text are “not afflicted with the inertia of matter”, this figure is poignantly afflicted with the emotional and mechanical hold of the obliviously pirouetting ballerina. Gravity is manifest as the fatal attraction exerted on Petrouchka by the indifferent dancer, and as the weight of the doomed puppet’s feelings, its tears helplessly marking time like a metronome.”