

PHIL ABERNETHY

SCULPTURAL CLOCKMAKER





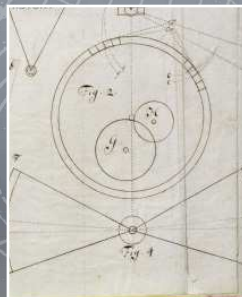
Historic Influences.

Whilst my designs are far from what is considered traditional Horology the work draws on 700 years of continuous Horological development, and is inspired by the work of the Crafts most notable clockmakers.

I admire their contributions to the science, and in a way pay homage to them by reinterpreting their contributions. In development I will make a study of the inventors original geometry and rework it into an animated sculptural format.



Lord Grimthorpe 1816 - 1905
Inventor: Double 3 Legged Gravity Escapement.



Original Geometry:
Grasshopper Escapement.



Galileo Galilei: 1564 - 1642
Inventor: Galileo's Escapement

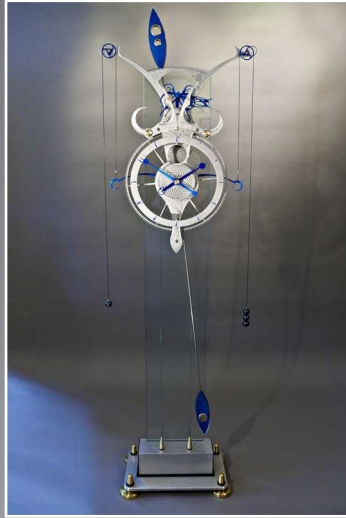


John Harrison 1693 - 1776
Inventor:
Grasshopper Escapement.

PHIL ABERNETHY



ASPIRE



ISOCHRONAL
AWAKENING



CLEITÍ



FIGHEADAIR



GALILEO



INSÍONN



MONOLITH



SUSPENSION

SCULPTURAL CLOCKMAKER

INTRODUCTION

As an artisan clockmaker from a family with long standing ties to the craft going back 3 generations I've always felt that the craft of mechanical clockmaking, with its myriad of devices, held great potential for exploration as an art form and so over the past many years I've explored the interpretation of the machinery of mechanical clocks as art works.

The current work is the culmination of many years of experimentation, research and thought, and has been influenced by ventures into other mediums, particularly forged iron work. Until recently the prospect of Horology as art was, given its complex considerations and development requirements, a medium tempered by economies. Recent developments in machine technology, particularly CADD and CNC technology, has made experimentation in the craft a more viable prospect. Over the last few years access to these technologies has allowed me to explore creative boundaries and realize a continual development of mechanical and electro-mechanical devices employable in the work.

Most recently the work has seen the reinterpretation of a geometrically complex device known as a Grasshopper escapement - a device that keeps a pendulum in motion. Over many years and experiments I've reworked this device into a sculptural representation and employed it in several works. Variations on this escapement can be seen in 'Monolith', 'Suspension' and 'Cleiti'.

It's also seen the interpretation of a double 3-legged gravity escapement. Typically these types of escapements and their interesting animations are hidden away in large tower clocks. Its obscurity and curious actions made it a prime candidate for interpretation and can be seen in Insíonn.

Mechanical clocks certainly have a place in our collective history. Not only have they enabled societal co-ordination and scientific inquiry, they have taken a distinct place within our lives, memory and homes. They've been with us for almost 700 years and have become indelibly woven into the fabric of modernity.

The history of how they came to be, and be so interwoven into us is a vast narrative of labour, experimentation and dedication by many individuals. They have enabled us to chart the seas and regulated our daily existence, for better or worse, within a narrative full of intrigue, shaped by ambitions, politics, war, and colonialism. In of the clocks themselves they are also a record of advancing technology, and interior fashion.

My involvement began at an early age and has continued throughout my working life. The story goes that my own endeavors as a clockmaker began at age 6, when I visited the vacant bench of my father who had just finished assembling a marine chronometer. My adjustments to the critical components were not appreciated. From there I went on to become his apprentice at age 14 and on completion shared a career of restoration work spanning 36 years.

Early on in my career I entertained thoughts of clocks as mechanical sculpture. At 16 my father and master brought home a 16mm film, which set in motion a quest that continues. The 1971 documentary 'Clock-maker' followed English clockmaker Martin Burgess through the design and installation of a massive sculptural clock at Shroeders Bank in London.

The film confirmed my feelings that there was more that could be done, as my contemporaries in the craft of watchmaking have so vigorously pursued. Technology has provided watchmakers a platform for experimentation, who offer creative reinterpretations of historic

devices that compel intrigue and fascination, as watches always have. More often than not that intrigue has in the past been hidden within a case, however the turning inside out of these machines allows everyone to appreciate the complexity and skill that goes into a functioning device.

Regards the work itself I've opted to use non traditional materials in the mechanisms. Advances in materials science means that there is a wide palette of materials that can be used that have significant advantages over traditional materials. I use Acetal (a high performance engineering polymer) for the roller pinions that connect gears to each other and sealed stainless roller bearings for the pivot points. This allows significant reductions in the weight required to run the clocks and provides long service life, without the need for constant attention or lubrication. I also use aluminum for the wheels and working elements, which provides a significantly reduced moment of inertia to further reduce the driving weight requirements.

While I'm capable of providing wholly mechanical clocks that require winding, and am happy to provide them on request, I have developed an automatic winding system that relieves us of the chore, if it is a chore. This allows significant flexibility in the design of a clock in that it can be rewound at very frequent intervals, thereby reducing the number of wheels required.

In the current work I also use quartz based mechanisms to provide time keeping. This might seem a bit at odds with my philosophy, however given the nature of my sculptural work it means I am pushing the required geometry for accurate timekeeping, especially with their dramatic pendulum arcs, and so I cannot expect them to keep accurate time. As with winding, if a wholly mechanical clock is preferred I can provide them, with the caveat that it will require significantly more attention from the owner, as wholly mechanical clocks do.

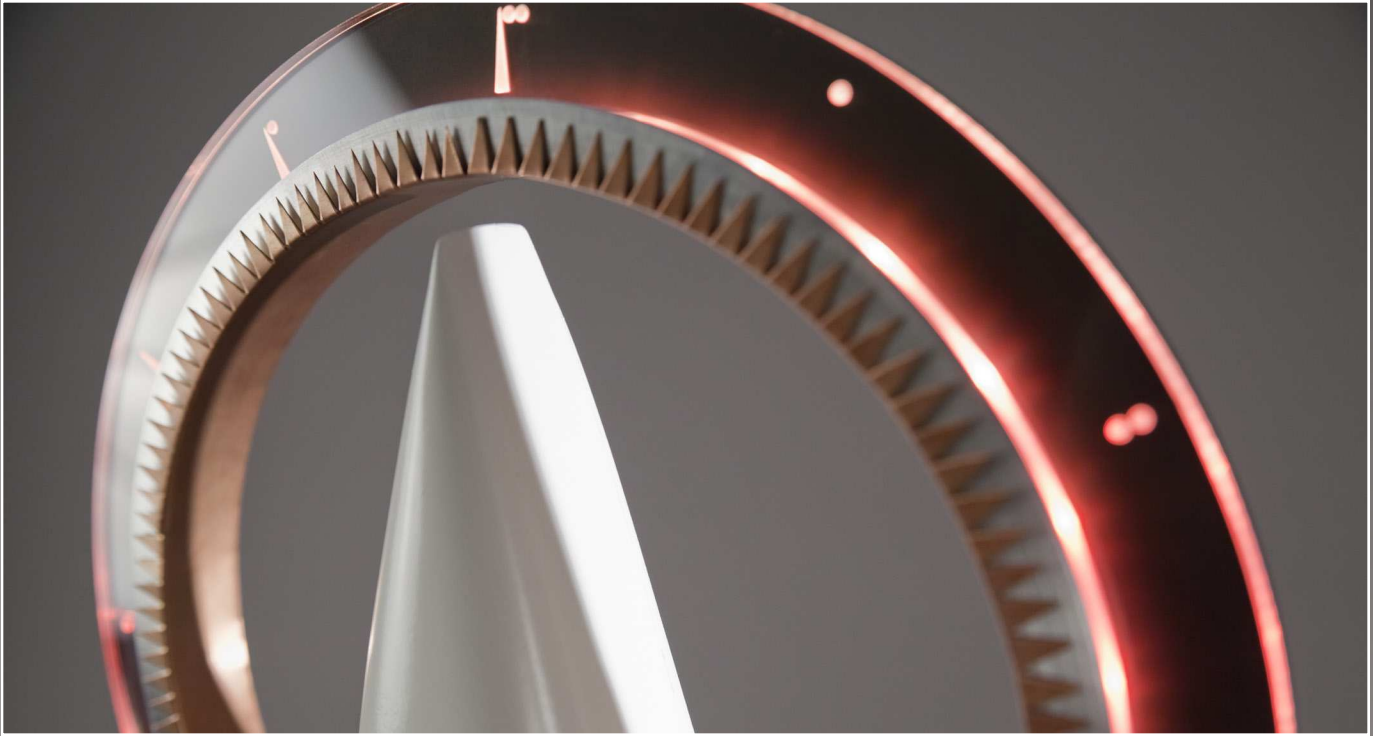
In the design process I make every attempt to design all systems to be as simple, efficient and easily adjusted as is possible so that they can be managed by those unfamiliar with clocks.

I'm always happy to discuss ideas, design possibilities and site specific installations.

Video of the work can be seen at www.philabernethy.com.

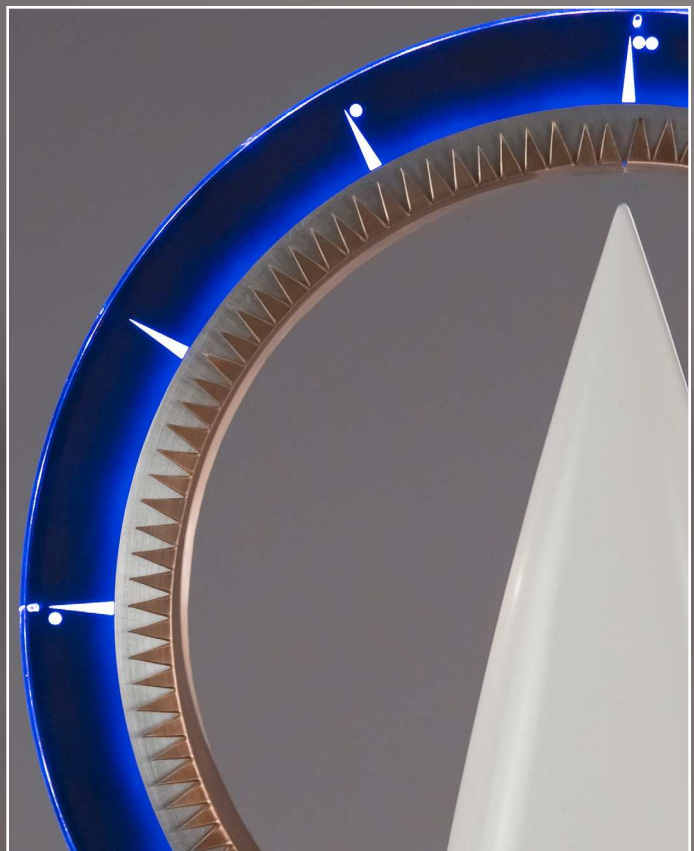


ASPIRE



I've always had a soft spot for different ways of indicating time. Aspire presents one mode I have had in mind for many years. Time is implied by the apex, as the ring passes slowly by the hour with only an approximate reading possible between the hours.

I am also keen on exploring the ways in which time indication in different formats affect our perception of time and its passing. Aspire is an experiment in such time perception. There is neither ticking nor apparent motion. Just the slow passing of the hour.



Technical Details: Synchronous drive motor, Programmable LED lighting.
Acrylic, copper, aluminum and PVC.

Overall Dimensions: IN: 12W 3D 25H CM: 30W 8D 63H

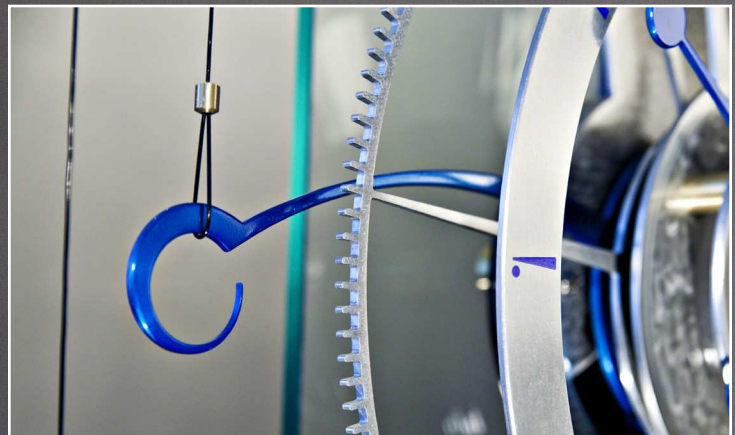


ISOCHRONAL AWAKENING

Based on the design 'Suspension' Isochronal Awakening is an exercise in patterning using a method called Guilloche and the use of color in the work. Guilloche is a traditional technique of plate finishing primarily used on watches and involves an abrasive disk cutting light reflecting patterns into the material surface. We used a mix of free hand and machine applied Guilloche on various components. We learned a great deal on this project in terms of various techniques we can apply in future work.

The dial for this clock was made in the traditional manner, by engraving the numerals into the surface and filling with an encaustic wax.

The escapement is a sculptural variation on the Grasshopper escapement, invented by the British clockmaker John Harrison, around 1722, and used in several of his famous sea clocks. The battery driven winding system which rewinds suspended magnetic balls is automatic and operates every 2.5 minutes.



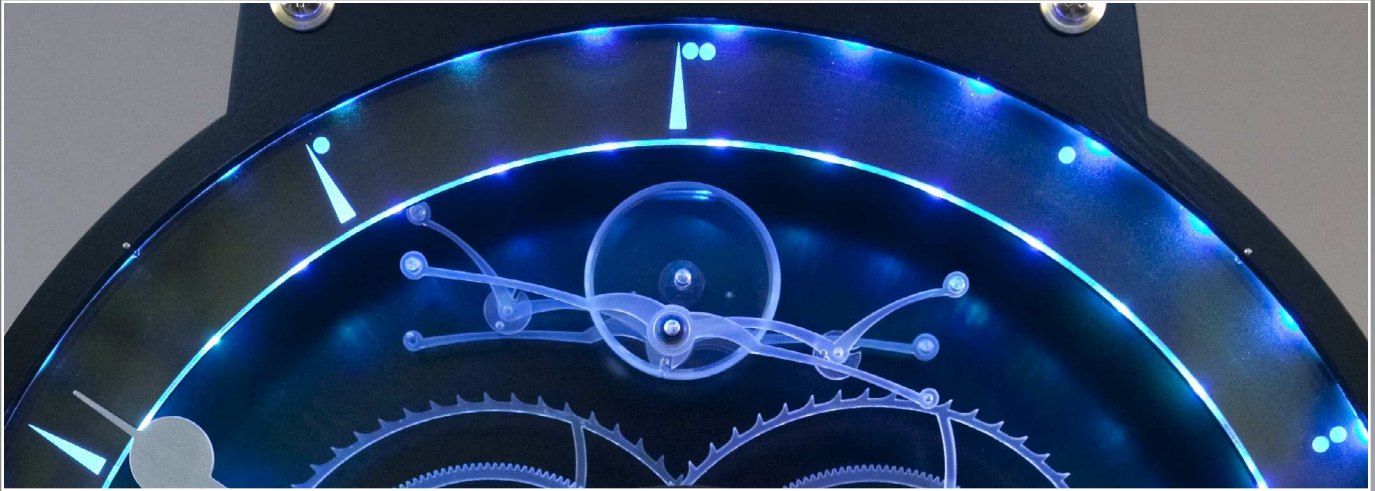


Technical Details: Grasshopper escapement, Automatic winding, Brass and aluminum, Quartz mechanism.

Overall Dimensions: 1N: 21.5W 11D 69H CM: 55W 28D 175H

CLEITÍ

(Gaelic: Feathers)



I took creative license with the Grasshopper escapement used in Cleití, which I believe is the first of its kind. I began with the arrangement used in the clock mechanism solely in consideration of its symmetry. When compared with the Grasshoppers used in Monolith and Suspension, one can see that their Grasshopper arrangements are one-sided. I've named this variation 'Spider' given its spider like appearance.





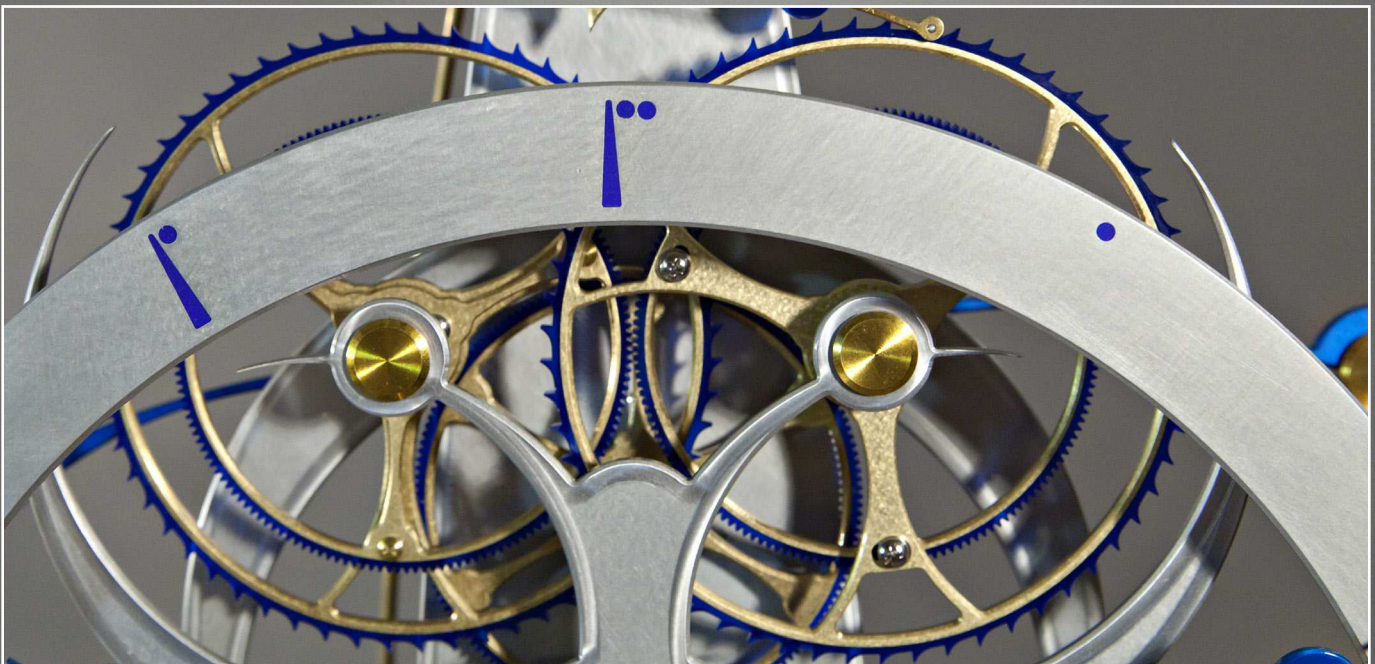
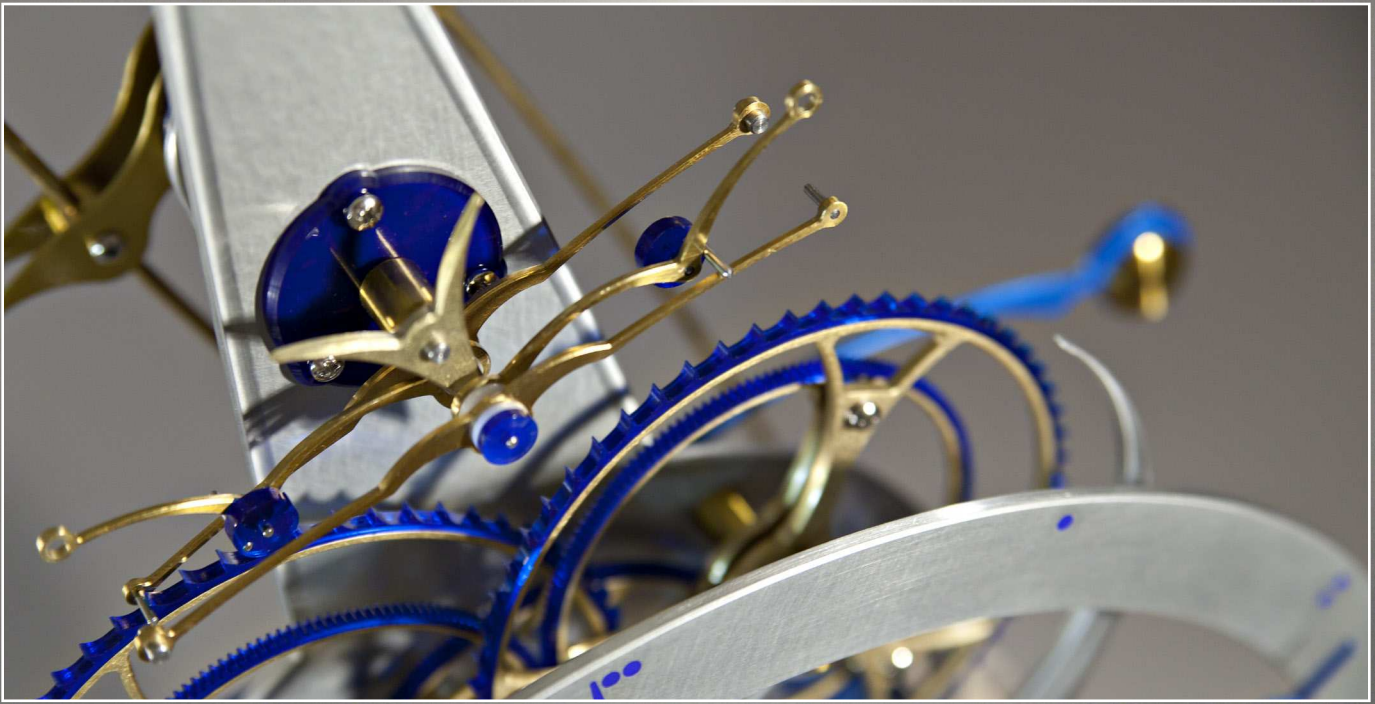
Technical Details: Spider escapement, Automatic winding, Programmable LED lighting, Peacock and Pheasant tail feathers, Acrylic, copper, brass and aluminum, Quartz mechanism.

Overall Dimensions: IN: 16W 8D 49H CM: 40W 20D 125H

FIGHEADAIR

(Gaelic: Spider)

The escapement used in 'Figheadair' is a variation on the Grasshopper escapement employing double escape wheels, as opposed to the single typically used. Rewinding is achieved via a small motor signalled by a reed switch and magnet arrangement and operates every few seconds giving the clock an animated and active presence.

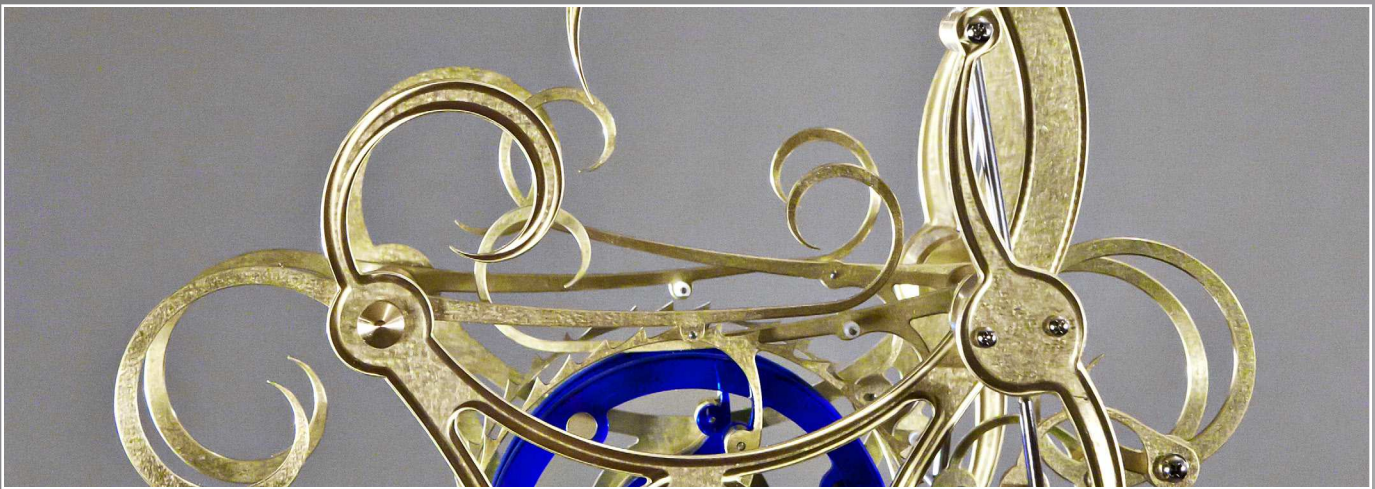


Technical Details: Spider escapement, automatic winding, acrylic, copper, brass and aluminum. Quartz mechanism.
Overall Dimensions: IN: 12W 5.5D 26H CM: 31W 14D 66H



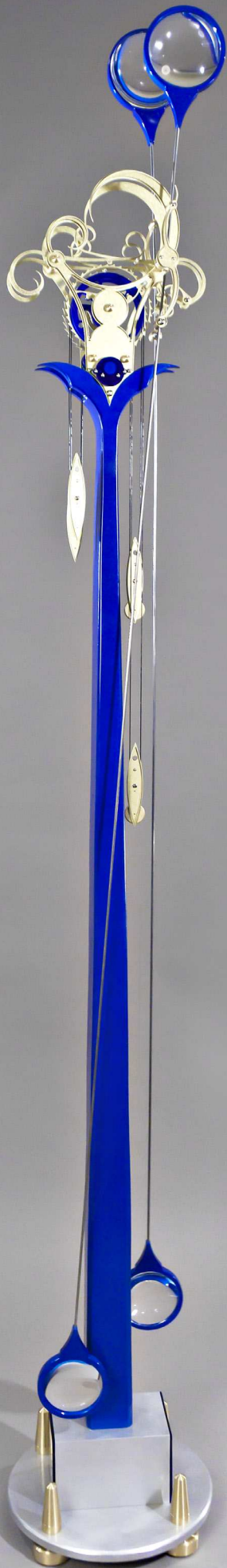
GALILEO

Galileo (Kinetic Art): Not a clock as such, though it could easily be turned into a hybrid. This work is a play of double independent pendulums of differing lengths impulsed by independent escapements. Having independent escapements and pendulums means that it will have the orchestral effect of the escapements, with their audible ticking, coupled with the curious visual effect of both the escapements and pendulums going in and out of phase. The lenses used are a reference to Galileo's contributions to astronomy and the composition is inspired by Gothic fashion of his time. The work is automatically wound and uses the Galileo's escapement, which he invented circa 1637.



Galileo: Technical Details: Double independent Galileos escapement.
Automatic winding. Brass, Aluminum, acrylic.

Overall Dimensions: IN: 75H 12W 12D CM: 190H 30W 30D



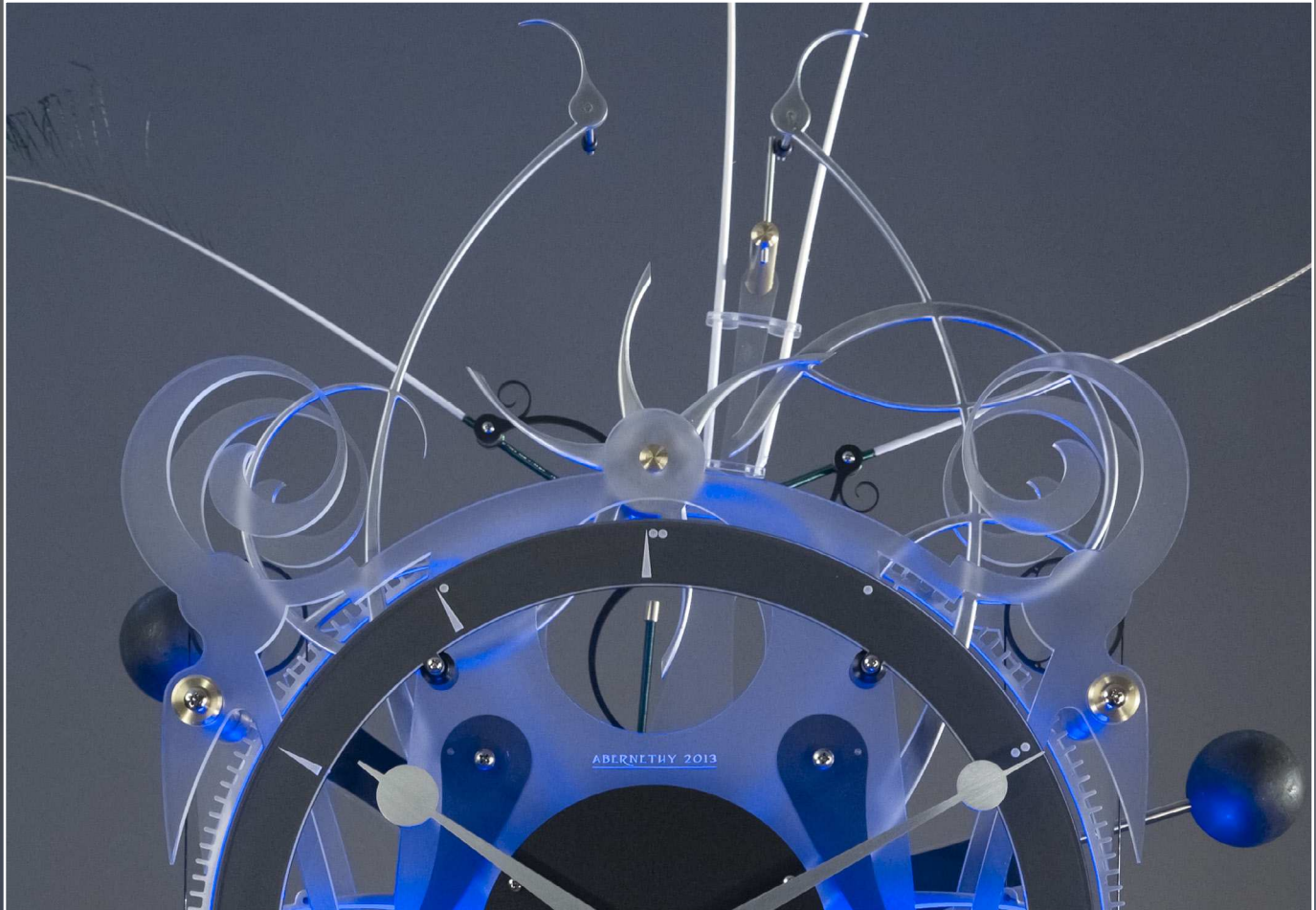
INSÍONN

(Gaelic: Mechanical time telling device)

I have two favorite escapements. Grasshoppers are first on my list by virtue of their geometry and animation. A close second is the Gravity escapement as used in Insionn.

Typically these types of escapements are used in very large tower clocks. Tower clocks need a significant amount of power to turn large hands and deal with weather conditions. If that same power were allowed to impulse the pendulum, it would adversely affect its timekeeping properties. The gravity escapement is arranged in such a way that this excessive power is used only to reset arms either side of the pendulum. When the arms are released by the escapement, they impulse the pendulum and keep it in motion. This ingenious arrangement was invented by Edmund Beckett Denison (Baron Grimthorpe) around 1850 and used in his design of the clock at Westminster (Big Ben).

The action of the escapement and the resetting of the arms are fluid and large enough to appreciate visually. In Insionn, I have deviated from the typical pattern of Gravity escapement by arranging the arms upside down. I have also slowed down the action of the escapement with large peacock feathers and a slow beating pendulum.





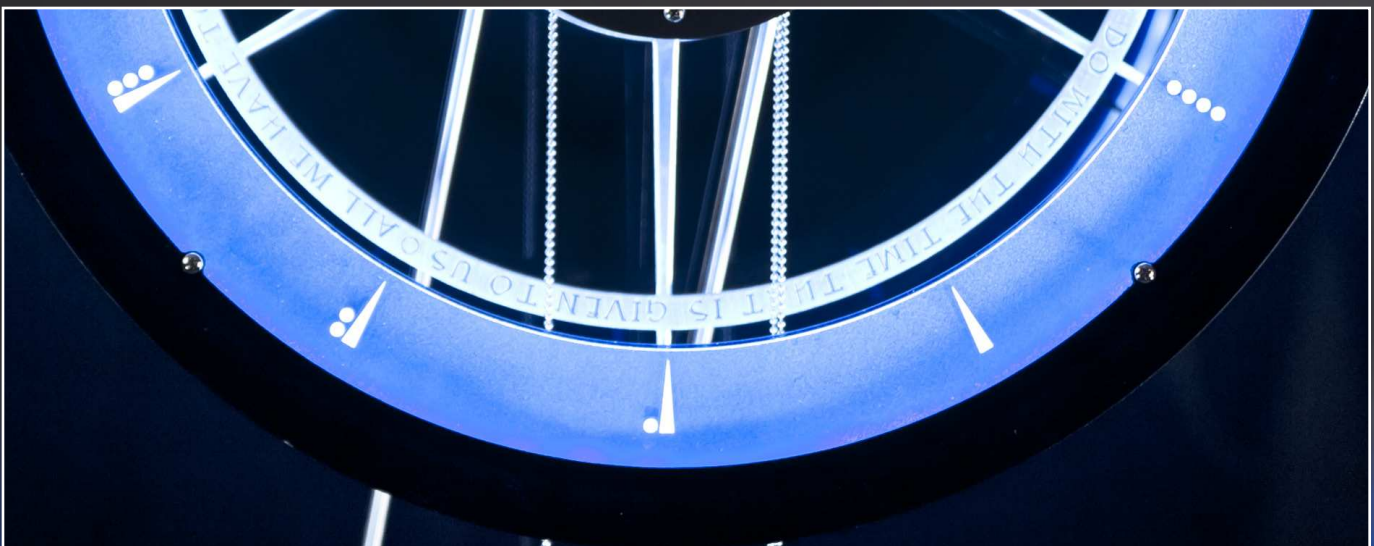
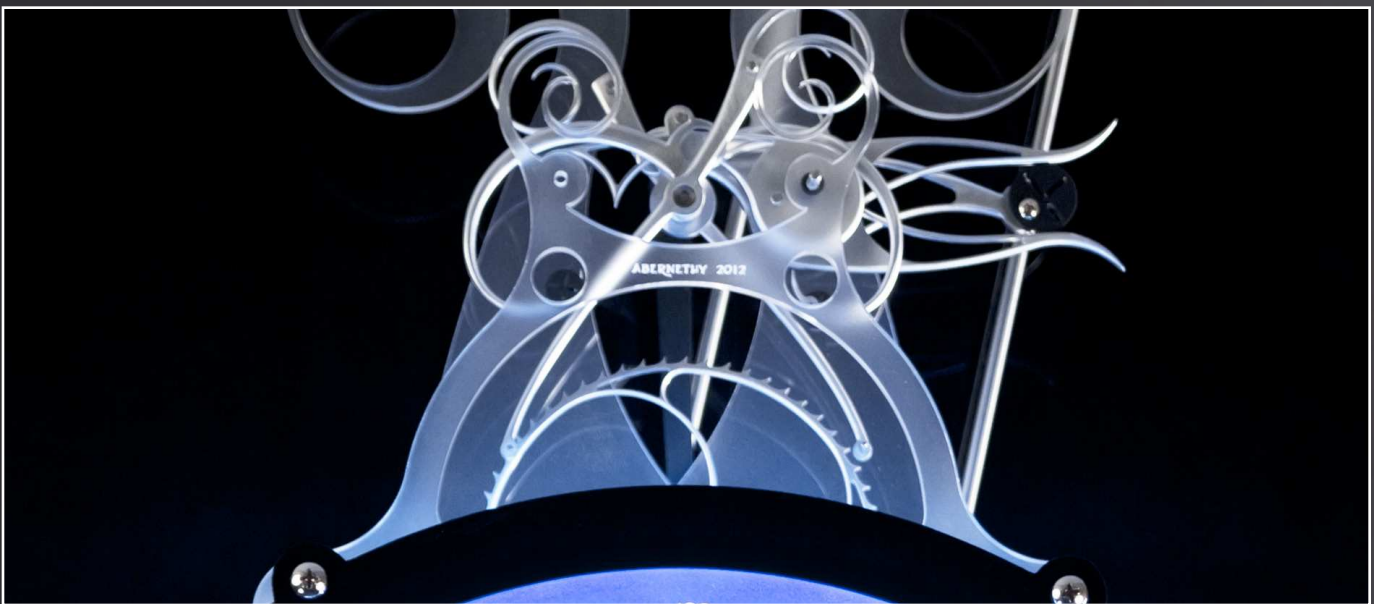
Technical Details: Gravity escapement, Automatic winding, LED lighting, Peacock feathers. Acrylic, copper, brass and aluminum. Quartz mechanism.

Overall Dimensions: IN: 32W 11D 80H CM: 84W 28D 200H

MONOLITH

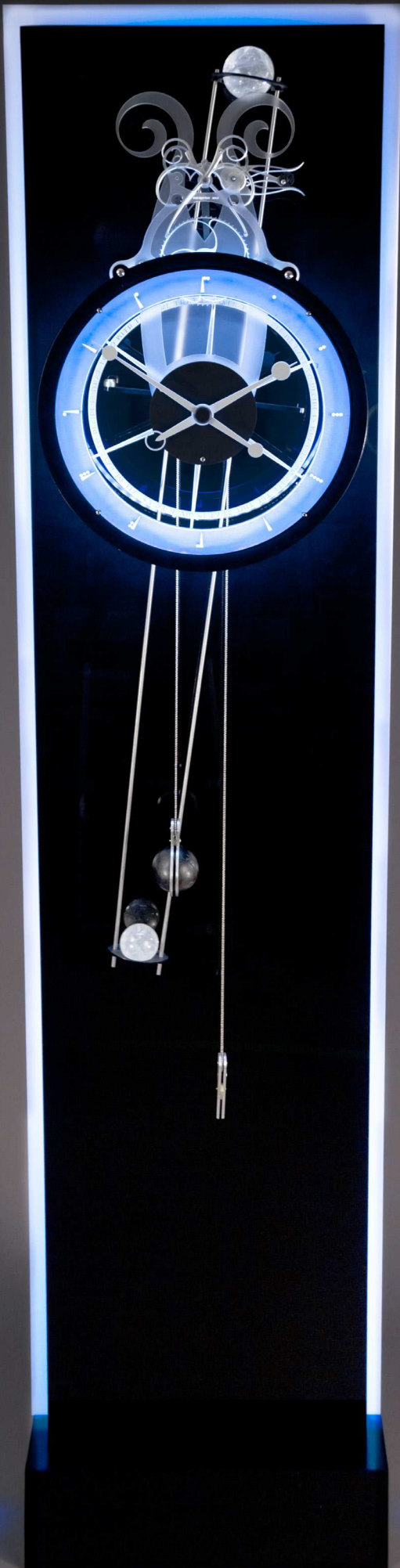
Monolith is a statement about the vastness of time and relative time scales. The black depth of the mounting panel conveys the immensity of past behind us, and the very slow beating pendulum conveys the incremental passing of time, as it recedes into the past. I thought the Tolkien quote from Lord of the Rings would give pause for thought about 'what to do with the time given to us' and therefore engraved it into the large aluminum wheel.

The clock features two historically important devices employed in the escapement and winding system. The escapement is a sculptural variation on the Grasshopper escapement, invented by the British clockmaker John Harrison, around 1722, and used in several of his famous sea clocks. The winding system employs an endless chain, which was first applied to clocks by the Danish scientist, Christiaan Huygens (b1629 - d1695).

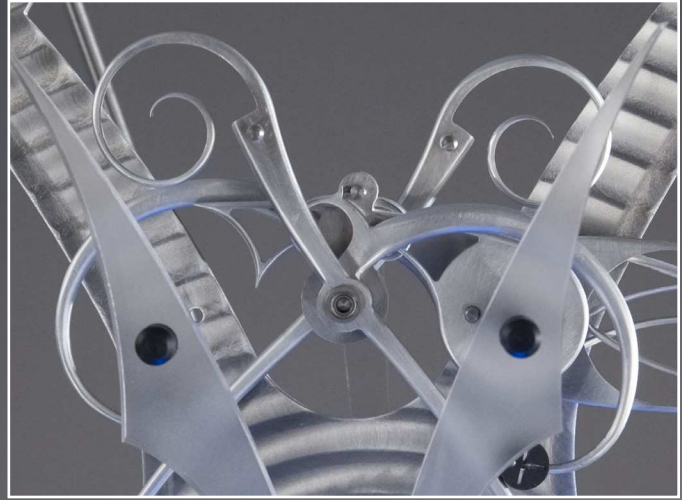
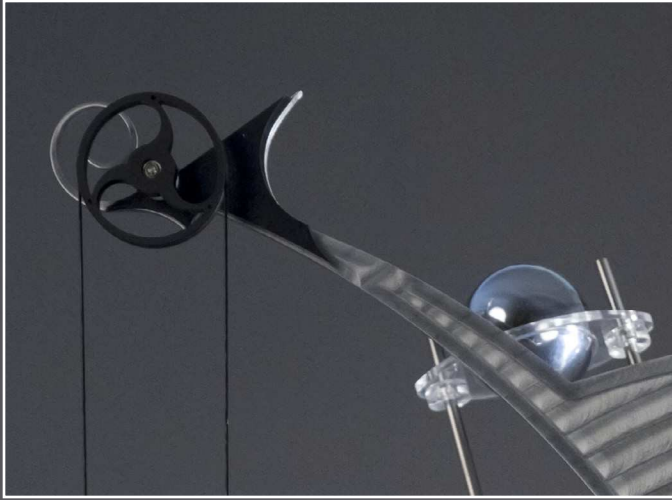


Technical Details: Grasshopper escapement, Manual winding (daily), LED lighting, Acrylic, copper, brass and aluminum. Quartz mechanism.

Overall Dimensions: IN: 20W 11D 87H CM: 50W 28D 220H

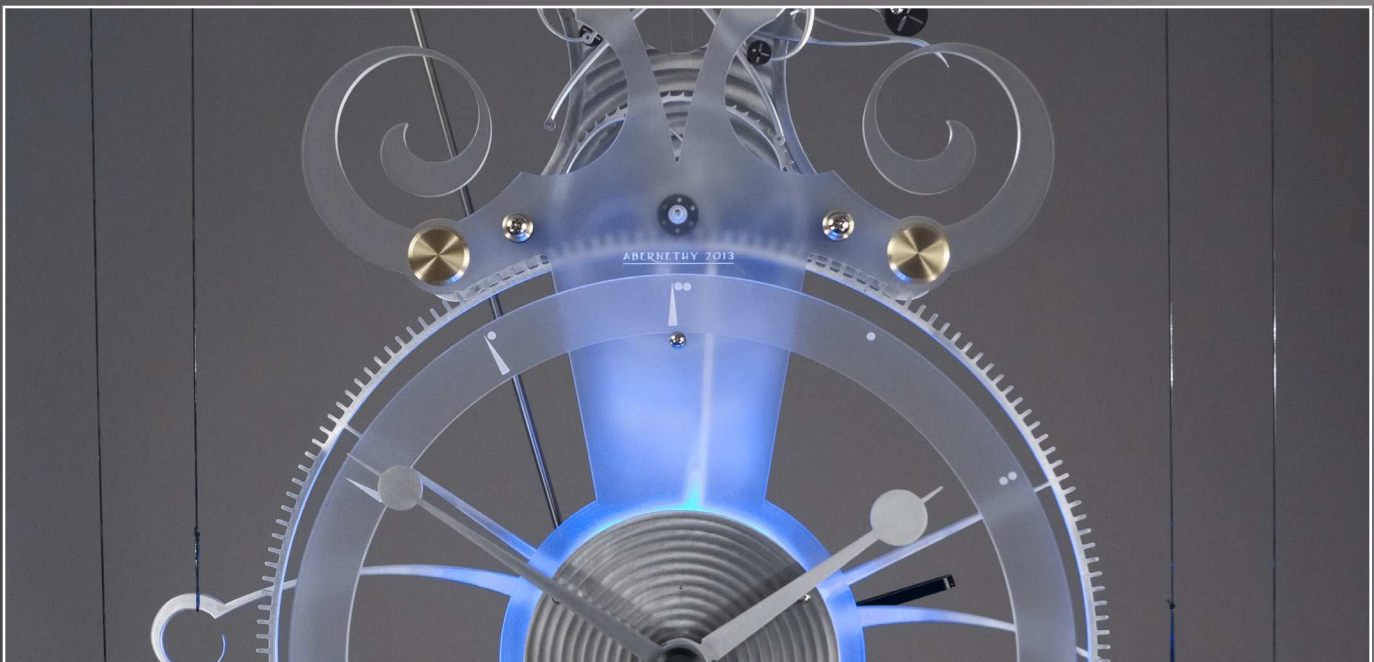


SUSPENSION



I consider this my first successful sculptural clock. I have made a few variations of it, much to the chagrin of my father who has had one after the other, as I reclaimed it from his residence and reworked it. It's seen a number of formats, from various window mounted versions to the floor standing clock shown.

It was also the first successful application of an automatic winding system I developed. The winding system, which operates at frequent intervals, allows me to reduce the number of wheels typically used in clocks, which in turn allows greater design flexibility.



Technical Details: Grasshopper escapement, Automatic winding, Programmable LED lighting. Acrylic, copper, brass and aluminum. Quartz mechanism.

Overall Dimensions: IN: 21W 8D 70H CM: 54W 20D 177H



ABOUT PHIL

Phil Abernethy was born in England to a family of clockmakers. After emigrating to Canada in 1976, he apprenticed to his father and became a journeyman clockmaker in 1988. After decades in the domestic and public clock field, their company, Abernethy & Son, has become widely regarded as masters of their craft in Canada and abroad.

Drawing on his broad experience, Phil has pursued sculptural clockmaking, creating machines based on historic and obscure devices spread over the history of the craft.

Phil Abernethy

6 Islandview Dr.
Nobel, ON, P0G 1G0

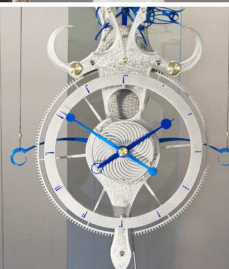
M 416 574 6795
philabernethy@gmail.com
www.philabernethy.com



ASPIRE



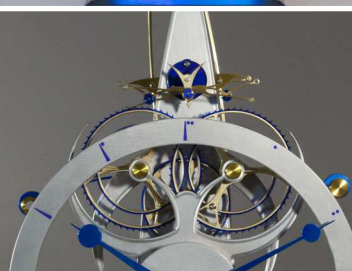
ISOCHRONAL
AWAKENING



CLEITÍ



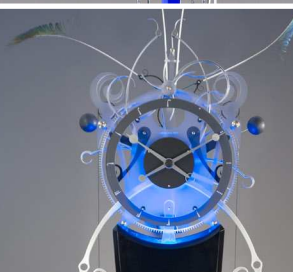
FIGHEADAIR



GALILEO



INSÍONN



MONOLITH

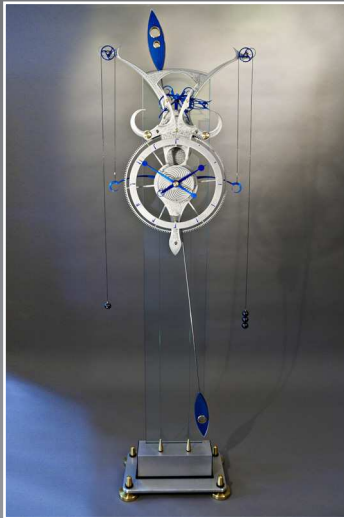


SUSPENSION





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Phil Abernethy

6 Islandview Dr.
Nobel, ON, POG 1G0

M 416 574 6795
philabernethy@gmail.com
www.philabernethy.com