

**U/G/C**

*ULTIMATE GRIP CONCEPT*

 **VIKING**



## UGC™ – the definition of ground contact

Viking have been making footwear since 1920. Our focus has always been on making constant improvements and producing boots and shoes suitable for the landscapes in which we walk. Old technology has been replaced by new, and improved production methods have enabled us to develop footwear that is increasingly better equipped to cope with our climate and terrain. We are constantly moving a few steps closer to creating perfect footwear.

Grip is an essential feature for varying terrain and climates. UGC™ – Ultimate Grip Concept – is Viking's own unique sole technology developed to suit Norwegian conditions. UGC™ combines key factors like stability and grip with lightweight, durable properties.

Our original UGC™ sole which was created for our heavy hunting and mountain boots has been developed into a product range incorporating UGC™ technology designed for specific areas of application. The diversity of the Norwegian countryside and climate makes obvious demands on footwear, regardless of whether one is walking in the mountains, on country footpaths, in wet conditions or in alpine landscapes. Viking have therefore developed various UGC™ soles with special properties designed to suit Norwegian topography, terrain and applications. During the development process we have always had one concept in mind: if it works in Norway then it will work anywhere.



## The relationship between grip and stability

In order to ensure that a sole provides the best possible grip two things need to be taken into consideration. The first is to find out which materials provide the best grip, and the second is to ensure stability for the foot.

UGC™ soles are usually made of a rubber mixture with a hardness of 60 shore. Shore is the unit of measure used to denote the hardness of rubber components, and this rubber mixture is relatively soft. So why do we use 60 shore? The answer is because this rubber mixture combines good grip, stability, shock absorption and durability.

## Ground contact, developed layer by layer

On the upper part of the sole we have used materials designed to support grip properties. For stability, for example, we use thermoplastic urethane (TPU) between the outsole and the midsole. This is a rigid plastic component that encourages a natural gait while also being stiff enough to prevent torsion. Some UGC™ soles also have TPU in the heels in order to secure transverse stability, or torsion stability as it is also called.

The midsole is made of EVA (ethyl vinyl acetate) or PU (polyurethane) and is designed to ensure maximum absorption in the sole. Some soles also have extra cushioning in the shock zones, i.e. the heel and front sections.



## Natural rubber; mixed, compressed and moulded to perfection

Viking only uses genuine natural rubber in its soles. Prior to vulcanization natural rubber is basically a fairly elastic and slightly fragile material that needs to be handled with care. From the time the rubber is extracted from the sap of the rubber tree and until the finished product is produced it is continuously handled by experts and undergoes comprehensive automated and manual processes.

Sulphur is initially added to raw rubber so that the sap (latex) can coagulate. The next stage involves the addition of the chemicals and dyes that are needed in order to create the desired rubber mixture. The vulcanisation process takes place either in a furnace or by moulding. This is an irreversible process that creates the final product, i.e. the outsole in the case of UGC™. Vulcanisation takes place at 120°C during which the rubber assumes an almost liquid form that glues the different components together.

## Assembly

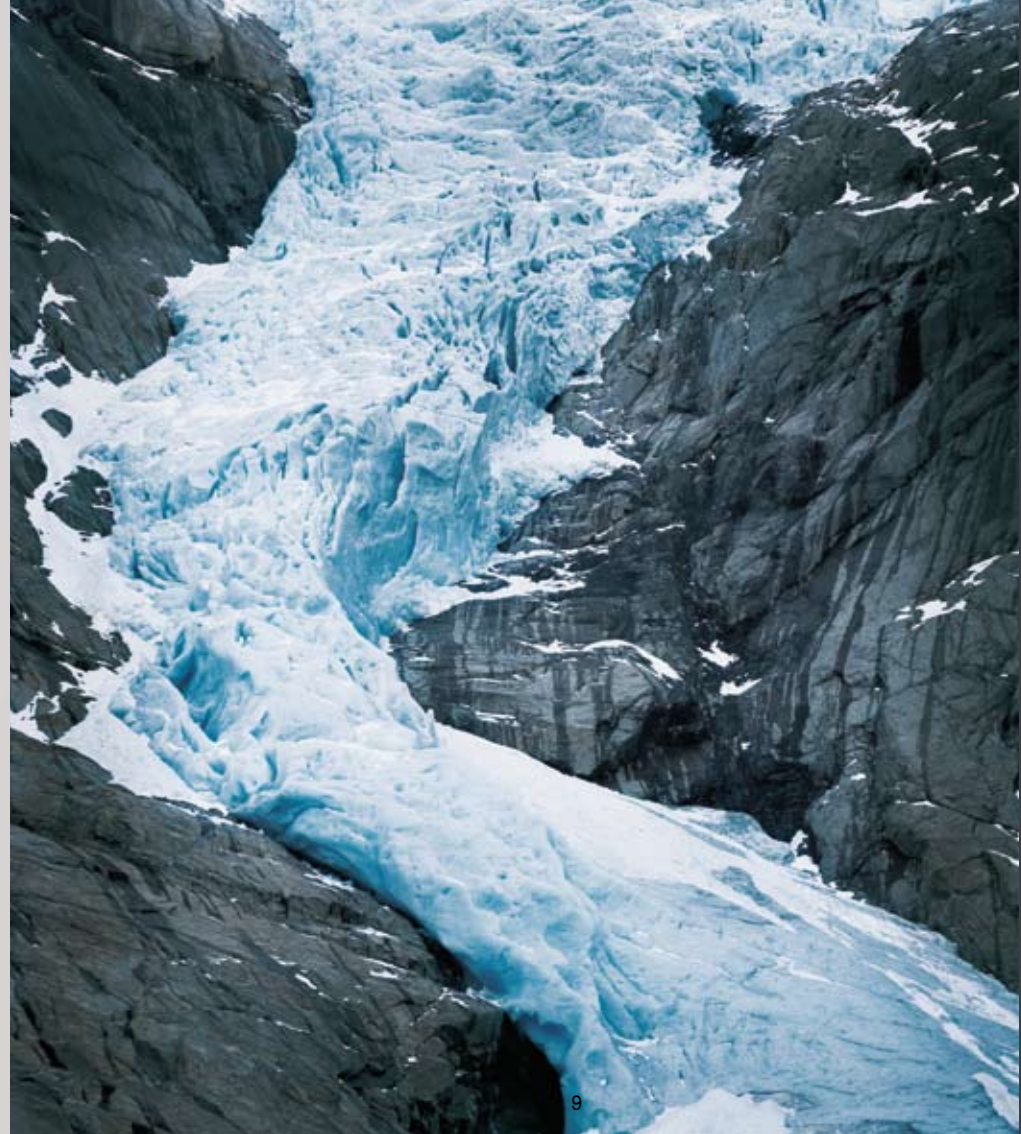
Rubber is a difficult material to glue. UGC™ soles are therefore subjected to a series of technical processes to produce the final product. Firstly the rubber is treated by carrying out mechanical and chemical “rubbing” – halogenation. This increases the surface area and makes the rubber more “adhesive”. A layer of polyurethane glue is then applied which is “blitzed” by heating it rapidly to a temperature of 75°C. This creates an optimal adhesive effect, which is also called adhesion, and it is irreversible.

## Testing

Since we live in Norway we are fortunate enough to have our test lab right outside our own living room door. This provides us with a unique opportunity to find out whether or not something works and our experience with Norway's landscape has been of decisive importance for our UGC™ technology.

However, some things need to be left to the machines so that we can quantify our experiences. For example, durability is tested by measuring a piece of rubber both before and after a round in a specially developed sanding machine. The piece of rubber is subjected to a pressure of 10 Newtons against a rotating sanding cylinder for a distance equivalent to 40 metres. The measurements achieved after such tests tell us how much had been rubbed off and thus the strength of the rubber.

Resistance on a wet surface and rocks is also tested. This is important in order to define the area of application for a specific rubber mixture. Constructing a sole is actually a precision task. A single UGC™ sole consists of many components and it is important that each component has the right properties.





## A landscape created for the landscape

To an untrained eye the technical aspects of an outsole consist of little more than patterns and design features. If you take a closer look you will discover details and elements that have been carefully devised. Like car tyres, drainage and what the pattern looks like are important for the grip.

## Asymmetrical – like nature

It has been our philosophy to give our soles those properties that provide the best grip on the surface for which the sole concerned has been designed. When the terrain is asymmetrical the lugs should also be asymmetrical. If you look at the position of the lugs you will notice that none of them are facing in the same direction. This means that there will always be a set of lugs that can provide grip, no matter where edges, rocks or roots are located in the terrain.

## Texture

Something that most of us do not consider, but which is nevertheless important, is the texture of the rubber. For example, it may be good to have one type of texture in the tip of the sole if you are going to climb steep mountains, but if you are going to walk on more undulating terrain a different surface, e.g. a wavy one, might be preferable due to the great differences in the surfaces which the sole needs to “grip”. There are many different ways of creating texture. Sometimes the surface of a sole displays a sandblasted effect, while at others it may be completely smooth.

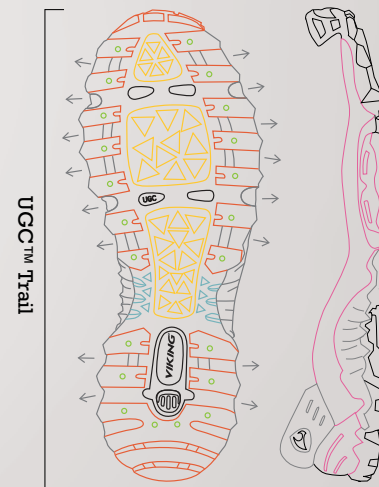
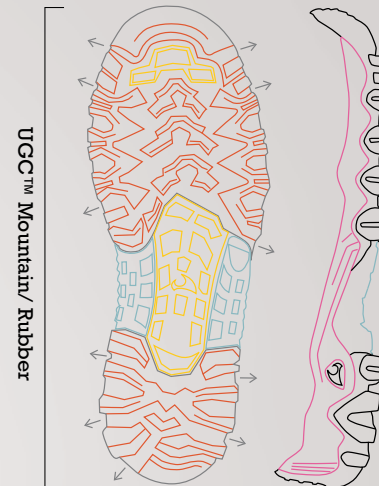
## Drainage

Drainage channels dirt, mud and water away from the grip surface, which in turn creates better grip. Drainage occurs along grooves running between the lugs and out to the outside edge of the sole. For this reason the lugs are conical and this also means that it is difficult for stones and gravel to become stuck between the grooves. In addition a conical structure provides the lugs with a perfect combination of flexibility and rigidity.

## Midsole

The rubber section in the middle is made of a more rigid rubber mixture than the rest of the sole. The job of this part of the sole is to provide maximum traction and braking power and to give extra protection and grip when walking on sharp or slippery rocks and roots. The rubber around this section provides shock absorption and extra good grip on slippery surfaces because the rubber mixture used is a softer variety (60 shore) and has been specially developed for terrain use.

- Grip
- Cushioning
- Stability
- Torsion bar/traction and braking power
- Lug pattern to provide grip in all directions
- Spikes/spike options
- Drainage





A high-tech sole for hunting and mountain models, specially designed for support, comfort and grip – with or without a heavy backpack – in rough and uneven terrain and climates.



## UGC™ Mountain – designed for stability

When going for long walks in the mountains and hiking through hilly terrain the whole foot require good support and stability – at all times. UGC™ Mountain supports the existing properties of the upper part of the shoe by virtue of a polyurethane midsole which provides stability and protection on all surfaces. An upper anti-twist nylon midsole provides stability for the whole foot and at the same time encourages a natural gait.

The varying terrain for which UGC™ Mountain has been designed makes great demands on grip and cushioning. The outsole is therefore made of a soft rubber mixture providing maximum grip on all surfaces, even ice and snow. UGC™ Mountain also had a torsion bar, a recessed mid-section consisting of extra hard, sturdy rubber lugs that provide extra grip when this part of the sole impacts against rocks, roots and slippery surfaces.

## Technical structure:

### Midsole

### Outsole/UGC™

Shock-absorbing EVA cushion placed in the sole's impact zone, i.e. the heel section.

Reinforced nylon upper section designed to ensure stability throughout each step – for the whole foot.



A flexi-zone which provides the flexibility required for a hunting and mountain boot.

Midsole made of lightweight polyurethane (PU). The midsole is designed with a high edge in order to provide maximum stability and protection in uneven terrain. It also has shock-absorbing properties, prevents torsion and encourages a natural gait.

Viking's rubber mixture with a hardness of 60 shore for maximum grip and durability.

Asymmetrical lug pattern that also provides good drainage.

Lugs placed in different directions provide grip, traction and braking power at all conceivable angles and in all types of terrain.

A recessed torsion bar for extra grip when this part of the sole impacts against rocks, roots and slippery surfaces.





Sporty trail sole specially designed for light mountain hikes and rambling. TPU for maximum stability, and a soft rubber mixture to provide grip in all types of terrain and climatic conditions.



## UGC™ Trail – created for hiking and rambling

Our UGC™ Trail sole is designed for a flexible foot, for use on light mountain hikes and rambling along footpaths and trails. UGC™ Trail therefore has properties that provide support low down in the sole, since such shoes often have a low cut to allow for maximum freedom of movement. This stability is achieved by using thermoplastic urethane (TPU), a rigid type of plastic with protective and stabilising properties.

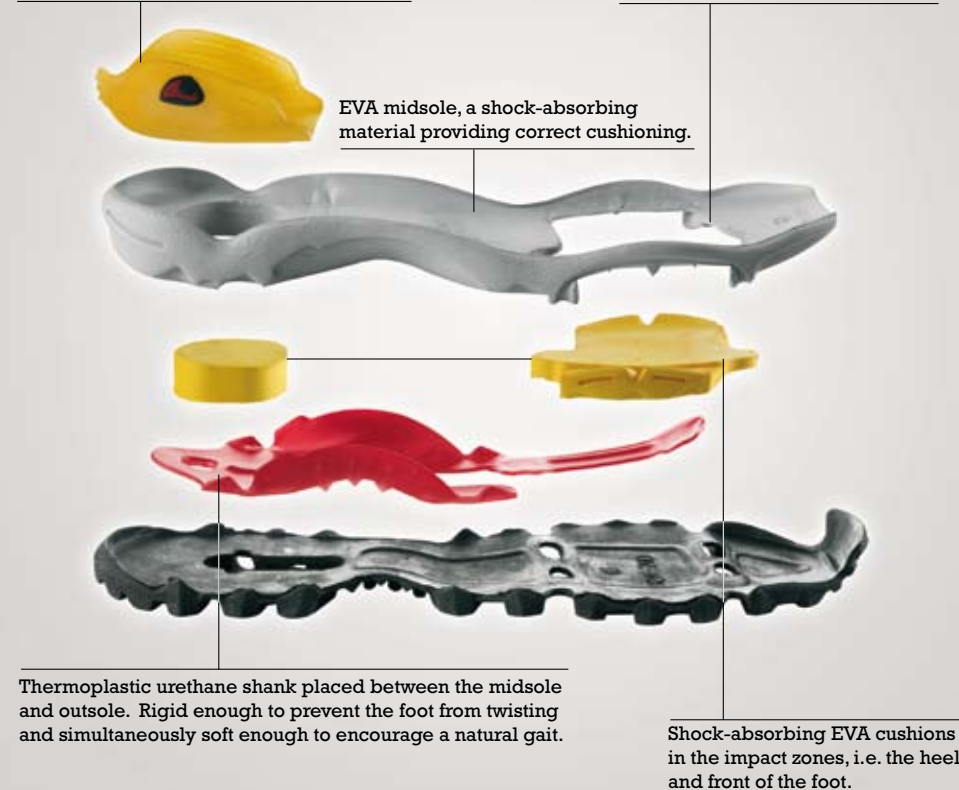
TPU is used in the heel and shank sections, etc. This provides the heel with transverse stability and prevents the ankle from twisting. The shank provides the sole with rigidity and protection, a combination that prevents torsion and at the same time encourages a natural gait. Because it is designed for active use, UGC™ Trail has two impact zones, one in the heel and one in the front section of the sole. Like the rest of the shock-absorbing midsole these impact zones are made from EVA. The outsole provides maximum grip and metal spikes can be inserted for coping with even tougher trails and walking terrain.

## Technical structure

### Midsole

Lateral heel reinforcement in thermoplastic urethane. Ensures transverse stability for the heel and prevents ankle roll over.

Deep, anatomical flexi-grooves provide the flexibility required for walking in various types of terrain.



### Outsole/UGC™

Deep, anatomical flexi-zones that provide the flexibility and comfort required by hiking shoes.

Soft, almost sticky rubber mixture with a hardness of 60 shore. Durable, while simultaneously providing a good grip on wet surfaces.

Triangular lugs placed in different directions to ensure grip in the traction and braking directions, irrespective of the angle.

Grooves for inserting extra metal spikes, e.g. for use on ice.





A sole specially designed to  
fit our Wellington boots.



## UGC™ Rubber – Natural rubber combined with maximum grip

For UGC™ Rubber we have combined the best properties of our sole technology with our Wellington boots. UGC™ Rubber has been specially developed with tough terrain in mind, e.g. hunting and walking in different sorts of terrain.

In order to utilise the properties of these Wellingtons and at the same time retain maximum grip it is necessary to have reinforcements to stabilise the transverse movements of the foot, even in the most difficult terrain. UGC™ Rubber is based on UGC™ Mountain's outsole with its extra cushioning, protective and grip properties. (This boot has been developed with reinforcing and stabilising materials in the front and heel sections, thus supporting the properties of our UGC™ sole.) A steel shank creates stability and provides with sole with anti-torsion properties.

## Technical structure:

### Inner sole

### Outsole/UGC™

Shock-absorbing, soft cushion in cellular rubber placed in the impact zone of the heel section.

Stiff inner sole designed to ensure good stability for the whole foot.



Steel shank with extra inner sole protection to ensure support and correct flexion.

Rubber section with a stabilising edge, which also combines the UGC™ sole's properties with the boot's flexibility.

Viking's rubber mixture with a hardness of 60 shore for maximum grip and durability.

Asymmetrical lug pattern that also provides good drainage.

Lugs placed in different directions to provide grip, braking and traction power in all conceivable directions and in all sorts of terrain.

A recessed torsion bar for extra grip when this part of the sole impacts against rocks, roots and slippery surfaces.





Winter sole for active leisure use in snow-covered landscapes. Extra sole patterns in the heel and front sections provide secure footing on snow and ice. TPU components for transverse stability and support.



## UGC™ Winter – aggressive sole for winter landscapes

UGC™ Winter is currently our most recent UGC™ sole innovation. It combines grip, cushioning and stability with the specific properties required by a shoe for active leisure use in Nordic winter landscapes. Its rubber mixture with a hardness of 60+ shore has been retained along with its excellent grip properties on ice and snow.

The special V-shaped lugs provide maximum grip on uneven, snow-covered terrain. They allow good transverse grip and enable good traction and braking power in the direction of movement, just like the 360° lugs in the mid-section of UGC™ Winter. The sole is also equipped with a special pattern on the front and back sections which provide good grip when traversing steep slopes covered in snow and ice. The midsole has a thermoplastic urethane (TPU) shank which provides torsion stability and encourages a natural gait. At the same time it also has a spike function via openings in the outsole where the TPU material forms a series of sharp-pointed plastic cleats.

## Technical structure:

### Midsole

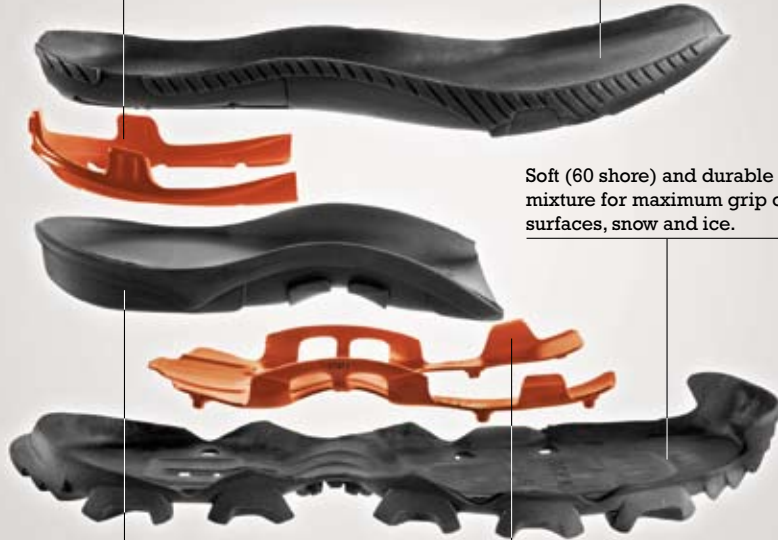
180° thermoplastic urethane protective heel stabiliser providing torsion stability and preventing the ankle from twisting.

An EVA shock-absorbing cushion provides maximum comfort beneath the whole foot, light weight and insulating properties.

Soft (60 shore) and durable rubber mixture for maximum grip on wet surfaces, snow and ice.

Theromplastic urethane shank that prevents the foot from twisting and optimises the tread. Has direct contact with the ground via openings on the outsole for extra grip effect.

Polyurethane (PU) midsole with shock-absorbing and stabilising properties.



### Outsole/UGC™

V-shaped lugs for maximum transverse grip, as well as traction and braking power in landscapes covered in ice and snow.

Grooves for inserting extra metal spikes, e.g. for use on ice.

360° lugs to provide grip at all angles and in all types of terrain.

A recessed torsion bar for extra grip when this part of the boot impacts against rocks, roots and slippery surfaces.

TPU spikes connected to the midsole shank that provide extra grip on ice and hard snow, with stability over the whole sole.



## Viking Comfort Technology

Viking's high-performance insole is supplied with some of our UGC™ equipped boots/shoes, but can also be purchased separately for other models.

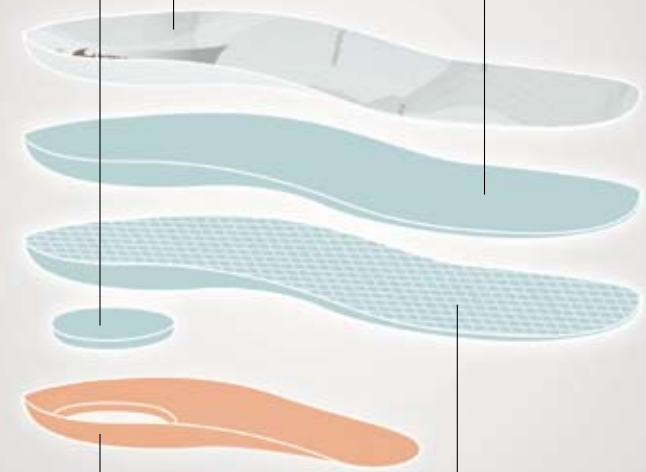
Viking Comfort Technology has been anatomically and ergonomically designed in order to provide maximum cushioning and comfort across the whole sole and to reinforce the existing UGC™ properties.

Our insole has a Neo-Bamwix upper, a material consisting of nanofibres from the bamboo plant. This material is characterised by its durability and its odour-free properties. Viking Comfort Technology creates an odour-free zone around your feet, while a perforated layer of foam on the bottom provides ventilation for perspiration and moisture from the feet. A gel cushion in the heel section provides excellent shock-absorbing properties.

Neo-Bamwix upper which is odour-free, anti-bacterial and an anti-irritant. Made from natural bamboo nanofibres.

Cushioning foam layer. Extra soft and shock-absorbent across the whole foot, from heel to toe.

Shock-absorbent gel cushion in the heel section.



A saucer-shaped heel stabiliser in thermo-EVA which provides support for the whole foot, in synergy with the separate structure of the shoe/boot.

A perforated layer of EVA, with ventilating and extra cushioning properties. Keeps the feet dry and creates a pleasant climate inside the shoe.

# The UGC™ collection:



Snowlion



Weasel



Anaconda



Viper

UGC™ Winter

UGC™ Trail



Force  
w/ neoprene



Trophy



Victory



Polar  
w/ wool felt

UGC™ Rubber



Vetti



Tyn



Mountain



Grouse Hunter

UGC™ Mountain



Deer Hunter



Hunter Pro



Hunter

## UGC™ – the story continues

We are proud of our UGC™ technology at Viking Footwear. We know that it works, simply because it has been tried, tested and developed to suit Norwegian conditions. And UGC™ has passed the test with flying colours on each and every occasion. This means that only one conclusion can be drawn: if it works in Norway then it will work anywhere.

We shall continue to develop our UGC™ technology in the future. Sole technology is constantly evolving with technical innovations allowing us to conquer new areas. During the course of the next few years we will therefore be introducing UGC™ in an increasing number of segments and on more models. Why? Because we move around in different types of climates and on surfaces that range from very slippery to stone hard, and we know that good grip is essential!

Finally it all comes down to having ground contact.



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Challenging the Laws of Nature since 1920