

Spinning Magnetic Fields

How Gyroscopes Work Like Electric Motors or vice-versa

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Introducing Cycles

"Invariably, bodies in motion spin, they revolve or oscillate, they go round and round."
Magnetic fields spin.

This page is a supplement to the main article "Time's Paradigm" which proposes that time itself is one, giant cycle. On a journey through a medium, the beginning and end are almost invariably one and the same, it is argued. There are cycles in cosmology, cycles in geology and cycles in chemistry. Indeed, it seems that progress can only be made by self-perpetuation. It is, therefore, no stretch of the imagination to add Space and Time to that list, magnetism, too.

Atomic particles propagating in cloud formation, spin, photons oscillate; it is the natural order of things that journey, to move in three dimensions rather than the illusion of one. In cross-section, a particle may appear to be propagating like a wave when actually it is spinning -- as does our moon on its journey around the sun.

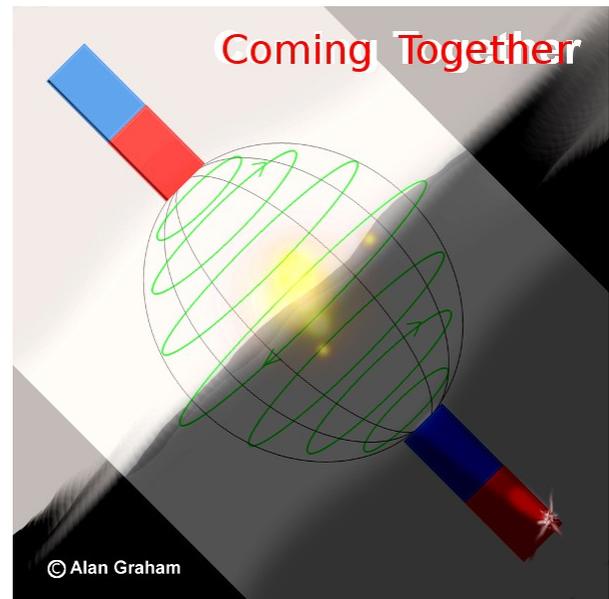
And then we have magnetic fields which appear to reach out symmetrically like fingers in all directions. This supplement will ask you to consider that, in fact, magnetic fields propagate as a rotational vortex, debunking the concept that magnetic fields are lines of force.

Sections below:

[Revealing The Mysterious Gyro-Torque Effect](#)

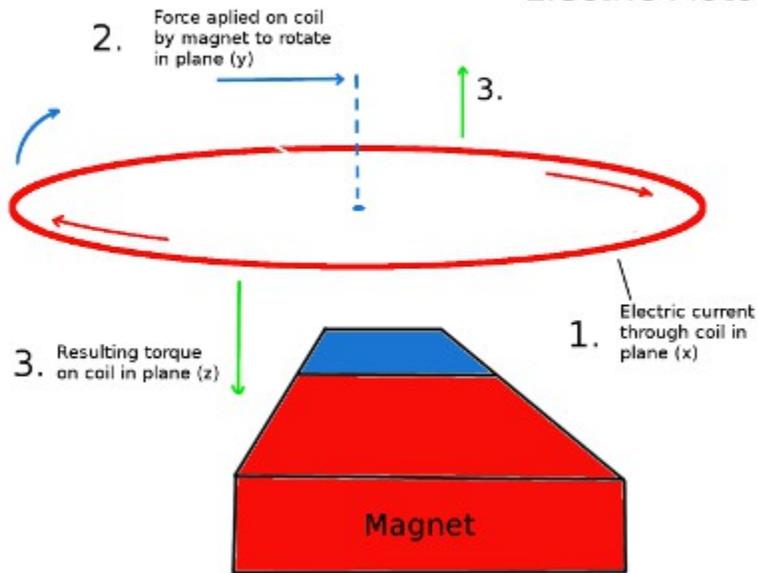
[The Classic Magnetic Field Re-interpreted](#)

[Gyroscopic Momentum](#)



Author, Alan R Graham, theorizes on the complexities of time and how we perceive progress, in his book, Time's Paradigm. This page on magnetic fields is a supplement to the work. You can read his entire proposal through all chapters here online, or download the ebook for free.

Diag B.
Electric Motor Forces

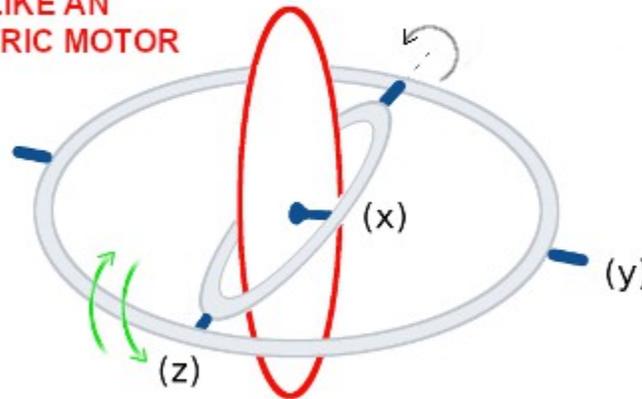


This suggests that magnetic fields emanating from poles are circular in nature and exert a rotational force, they are not lines flowing out of one pole and back in the other, as is usually depicted. In an electromagnet this circulatory field we can imagine as an extension of the coil and the current flowing, propagating out with the same spin as the current.

The construction of a simple three axes gyroscope (shown below) illustrates how it will operate like an electric motor if the alternating field is manually executed.

Axes of perpendicular rotation in a gyroscope

**JUST LIKE AN
ELECTRIC MOTOR**



Spin wheel about (x),
Force frame to alternate about (y),
See wheel rotate rapidly about (z).

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The author notes: He has built many such devices of various sizes over the years, and has contemplated the possible construction of a pedal-powered tricycle where translational forces would substantially augment the power applied by legs. A drive shaft is easily mounted. It would be reasonable to suggest that a similar configuration might power a hobbyists helicopter - indeed, a fun project perhaps for a university physics team.

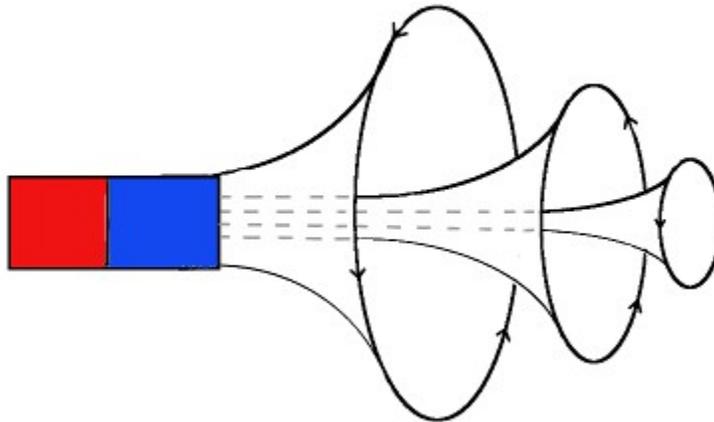
(Aluminium the construct material)

Permanent magnets, too, have a field associated with the flow of electrons within their atoms. Magnetic fields are intimately associated with electrical charge. But just like the 'gyroscopic effect', magnetic fields are equally misunderstood and confound explanation.

The Classic Magnetic Field Illustration

Looking at the classic two dimensional depiction of a magnetic field, as created by iron filings on a sheet of paper, we are simply presented with a cross-section of a magnetic field. By visualising many cross-sections at a multitude of angles we can project the traces through three dimensions (see diagram C), creating a circular pattern for the field rather than lines. The lines we see created by iron filings are tiny induced magnets lining up, whereas the actual force compelling them to point in a particular direction must be perpendicular to their polar alignments.

Diag C.
Circulating Magnetic Field in 3D



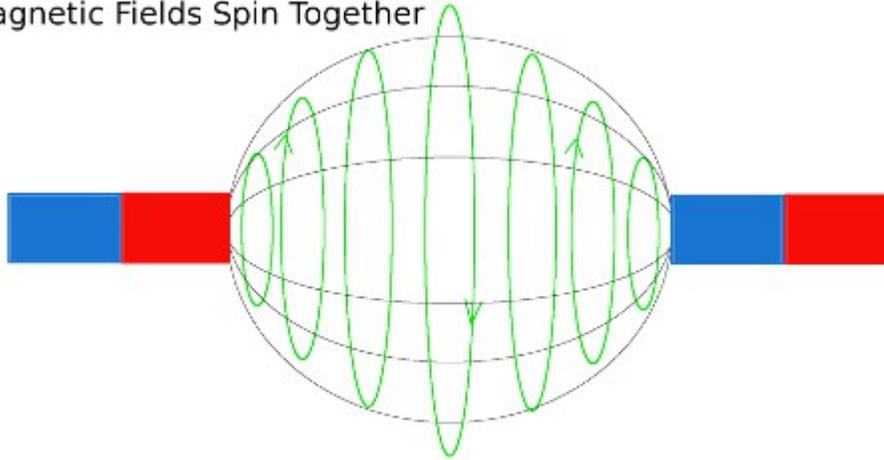
Copyright: Alan Graham

The Lorentz Force Law is not in question here. What remains unanswered in the classic view is how exactly the mysterious magnetic field permeates and how both poles are able to attract objects when fields are expressed as lines of force projecting out from the north pole and in towards the south pole.

To begin with we must accept that magnetic field lines emanating from the north pole of a magnet and returning to the south pole do not necessarily imply motion. Likewise, the concept put forward here, that there is a rotating circulation expressed by the magnetic field at each pole, is simply a matter of visual interpretation.

It is often dubiously written that on switching on an electromagnet, a magnetic field is dispersed from its north pole at the speed of light, which means theoretically that there would be a measurable time delay between departure and arrival of the field at the south pole. It seems unlikely that magnetic field generation at the poles would not be simultaneous! So what is really happening?

Diag D.
Magnetic Fields Spin Together



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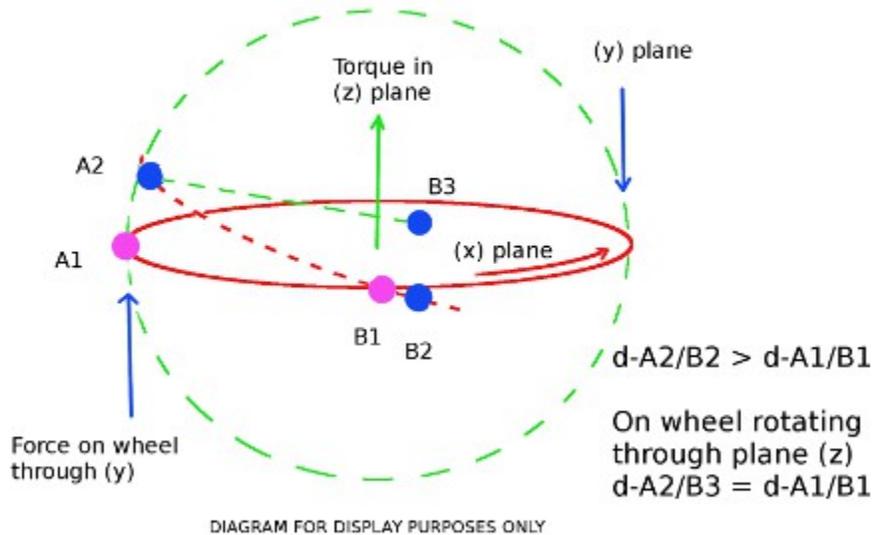
It is more likely that both poles become activated at the same time and their fields both propagate out, causing attraction by induction. That attraction is a circular influence - a vortex. Two magnets facing one another with opposite poles (diagram D.), have magnetic fields rotating in the same direction, creating a closed system between them. By contrast, two magnets with similar poles facing off have rotations that oppose one another - therefore obvious repulsion.

This gives us an understanding as to why the north and south poles of magnets attract and repel one another and how electric motors and gyroscopes function in, principally, the same way.

The Mysterious Gyro' Effect Revealed

In both diagrams A and B the spinning (current) coil and wheel rotate very marginally in the (y) plane, while force is passed to torque in the (z) plane. This is due to the fact that both wheel and coil are rigid objects whose spins (angular momentum) in this discussion are high speed.

Diag E.
Points Plotted on Spinning Wheel



3D plotting of points (see diagram E.) on their circumference - were wheel or coil forced to rotate through (y) - show that their physical shape would have to distort, ergo break, and would therefore only be capable of rotation in (y) if they had elastic properties. In order to retain their shape, not break apart under these contradictory forces and continue spinning unimpeded, rotation through (z) is their only recourse - a path to freedom and continued angular momentum.

For this reason alone force is transferred as torque from (y) to (z) plane. Nothing magic nor mysterious about it.

... (And the spinning wheel doesn't fall off your finger).

How Spinning Magnetic Fields are Gyroscopes and work like electric motors.

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