

Hover Boards and the Skateboards of the Future



[Joe's Hoverboard Gallery: www.frozenhoverboards.buy999.com]

By

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Table of Contents

Acknowledgements 4

Introduction 6

Chapter I: Past, Present and Future of Skateboarding 8

Problems; Friction, Slow, Heavy, Hard to Ride	10
How Skateboards Are Made.....	11
Hoverboards; Skateboards of the Future	13
Future Designs and Styles	14
Back Packs and Accessories	18
Interactive Skateboard Parks	20
Rainy Day Video Games (VR Living Rooms).....	21

Chapter II: Hoverboard and Skateboard Mechanical Components 24

With or No Wheels	25
Landing Gear Retraction	26
Wheels Without Friction	27
Back to The Future and Sci-Fi.....	29
Propulsion	31
Hover Propulsion Theories of Bill Butler	34
Steering and Control	36
Materials and Weight.....	38

Chapter III: Integrated Communication System 41

Voice Activated Controls	41
Hover Board Formation Flying (Swarming).....	42
Video Feed - Sending via Wireless Internet.....	43
EMT Alert Systems with RFID Active Tagging.....	43
Cell Phone 5G Wireless Technologies	44

Chapter IV: Advanced Skateboard Systems 45

Stability Control Systems.....	46
Holographic Projection	48
Mind Control - Human/Hover Board Interfaces	48
Lighting and Safety Systems	49
LED Self Powered Lighting System.....	49

Chapter V: Skateboards at Work 50

Security Guards	52
Soldiers and Future Fighting Force	52
Referees at Sporting Competitions	53
Rescue Workers.....	54

Chapter VI: Skateboard and Hover Board Power Units 55

Solar Power.....	56
Magnetic Wheel Power Charging	57
Bump Charging	58

Chapter VII: Skateboard Parks of the Future 59

High Level Contests and AI Scoring Systems.....	64
Take the Skateboard Park Home (VR Living Room).....	66
Skateboarding in the Lunar Colony	67
The Low Gravity Experience	68
Mars Colony Skate Park Master Plan.....	68
Conclusion and Concepts.....	68

References and Works Cited 70

Background Reading & Research Papers 70

Media and Internet Articles 71

Video Games, Computer Systems, Virtual Reality 72

Skate Parks and Skateboard Park Websites 72

Skateboard, Hover Board, Skateboarding Links 73

Internet Articles of Interest Available Online 74

Online Links to Future Skateboard Tech - Pictures Worth 1000 Words 75

Bonus Articles by Lance Winslow 76-79

Acknowledgements

As the coordinator for the *Online Think Tank* it has been a pleasure putting together teams of thinkers and participating with them to come up with viable solutions to the challenges and problems that plague mankind. Of course sometimes simple technology challenges are the most fun. Take this project for instance; *Hover Boards of the Future*. After completing this thinking exercise our **Hover Board Team** is quite certain it is actually possible to design and build a workable Hover Board that is efficient, maneuverable and fun right now in the year 2007.

What does it take to build such a revolutionary new technology for the sport of Skateboarding and how can we determine the spin-off value of potential applications? Well, it seems we have nearly everything needed now and the knowledge to make it so. It is for this reason that I am adding an "*acknowledgement*" page to this eBook and Research Project. And so let me begin by thanking everyone who has contributed, all those allowed us to interview them or wrote research papers on sub-topics.

First I wish to thank **Amy Zuckerman**, author of "**Tech Trending**" who contacted us for a question about Skateboards of the Future (2030), as this simple email is what launched this project and brought back a balloon full of memories as a kid riding skateboards with my friends.

Next I wish to thank a few of the folks and friends of the Online Think Tank. **Brian McBride** of Texas is a successful architect who discussed with us many aspects of Skateboard Parks and Family Recreational Facilities. **Joseph J. Monek Jr.** assisted us in realizing the potential of magnetic skateboard parks and Hover Board systems. A bit of gratitude also goes **Joe Rae** in on-going dialogues of personal flying craft from Flying Cars, Motorcycles to Ultralights, UAVs and Parasail Technologies. I wish to also thank **Bill Butler** for his *HoverTech.com*. Thanks to **Joe's Hover Board Galleries** for imaginative inspiration. **Dr. Nathalie Fiset** asked tough questions on safety and made us think deeper, serving as a reality check.

Indeed the concept of the Skateboard Parks of the future was really brought to life thru the renderings and designs of the *San Juan Skate Park* from the **Acconci Studios** in Brooklyn, NY. Special thanks goes to **Garrett Ricciardi** and the team of designers who are truly on the cutting edge. The Design Team consisting of **Vito Acconci, Darío Núñez, Sehzat Oner, Jeremy Linzee, Peter Dorsey, J. Gabriel Lloyd** and **Sarina Basta** are World Class innovators and have illuminated the potential of Skateparks.

Dr. Skateboard, an online guru of Skateboard Physics (DrSkateBoard.com) assisted our team in understanding exactly what we were dealing with in order to insure that the Hover Board Designs that we will be building in the future are safe, controllable and perform at optimum levels. Along with the laymen explanations of Dr. Skateboard we wish to thank other intellectuals who understand physics, energy, flight and reality.

Therefore, we must give credit to **NASA, Lockheed Skunk Works** and **The Boeing Company** for their online image galleries of design aerospace design. Also thanks goes to **Georgia Tech Aviation Engineering, Stanford Engineering Department, Berkeley's Micro-Air Vehicle Program** and **MIT**.

The Future Fighting Force Roadmaps from the **US Army** and the **USAF Research Labs** also assisted us on a look-see over the horizon and their websites have a number of great papers to read. Certainly we must also thank the folks at **DARPA** for their willingness to push the boundaries of technologies in robotics, aerospace design, artificial intelligence, propulsion and future net-centric systems, as well as the inspiration to allow us to dream, create and achieve from outside the cave. Nothing is impossible if you put brainpower, imagination and will together

There are also two very good authors of skateboard books that I wish to recognize for their work; **Michael Brooke** ([The Concrete Wave - The history of skateboarding](#)) and **Doug Werner** with co-author **Steve Badillo** ([Skateboarding: New Levels: Tips and Tricks for Serious Riders](#)). Without these works, our team might have made mistakes due to misconceptions of the sport of skateboarding, as you must understand it has been a few years sense any of us have caught air off a Skateboard Park or Homemade Ramp.

If anyone was inadvertently left out of these acknowledgements please forgive me, as it is simply because upon completion of this project; I am so overwhelmed by the generosity of so many folks and too with the future promise and realistic potential of Hover Boards.

**We welcome you to the Online Think Tank and sincerely would like your input, comments and ideas to help us propel this concept into a reality. Thank you again, Everyone.*

Lance Winslow

Hover Boards and the Skateboards of the Future

Introduction

by Lance Winslow

There has never been a greater time to be a kid and it is only going to get better. The toys of the future will be absolutely incredible. In fact today we can walk down toy isles in any store and we are overwhelmed by the advancement in sophistication and authenticity. The kids of today like the complexity and realness of the toys and for adults it makes them wonder;

"Where were all these great toys when I was a younger?"

If you have children or grandchildren perhaps you have said or thought the very same thing? If you are a kid, well you do not even know how good you have it. Some of the flying toys, RC-remote control models and dolls are unbelievable in both design and technology.



Then there are the computer games, video games and tech-toys, wow, are they incredible or what? All the kids have cell-phones too, which were not even available when their parents were young. Heck most of them did not even have computers.

This book is about the Skateboards of the future, but they will not really be skateboards at all. Well they will look like skateboards but they will fly too. All the technologies presented in this book are either available now or in the works, as emerging technologies. Everything in this book is possible and probable in the future and the skateboards, skateboard parks and skateboarder are all ready to do a time warp into the future.

What a great time to be a kid. In past periods the children played with simple toys or even sticks and rocks; in the future the sky is the is not limit and the ground no longer is. Perhaps you have watched the movie *Back to the Future II* and the fancy hover board-skateboards? Well these Hover Boards have been on the drawing boards for years and some have actually been built.

Of course until now they have not worked that great or been all that impressive as they were in the Hollywood movie *Back to the Future II*, but with the advent of new materials such as carbon nano-tubes they will be. Carbon nano-tubes are 100 times lighter than steel and 50 times stronger. These are vast advancements from the first wooden or plastic skateboards.

In this book on Hover Boards, the Skateboards of the Future we will take the emerging technologies and integrate them into the sport of Skateboarding taking the entire endeavor to a whole new level. This work has been a labor of love for me; it started out as a simple book when a fellow writer proposed the topic and then the research into the technology that might make all this possible drove the project to up the ramp and into the air, where future awaits. The only question is;

Are You Ready for the Future of Skateboarding and the New Technologies of Hover Boards?

If not get ready because all these high-tech concepts are in the pipeline and they are screaming ahead with or without you. The Future of Skateboarding will never be the same again. I hope you will enjoy this book and most of all I hope it will make you think, imagine and help us design our future, because *it's time to fly!*

Chapter I

The Past, Present and Future of Skateboarding

There have been some reports that the first skateboards a *development of the early 1900s* and were literally 2 X 4 Boards strapped to wheels. Roller Skates, which a much older concept, were robbed of their wheels to make these early skateboards contraptions. The wheels were removed and re-mounted to the boards and sometimes baskets or wooden crates were also attached.

In the 50's there were actually people who put clay wheels on boards and attempted to ride them in places like California.



Street or *Sidewalk Surfing* it was called. Sometimes people would take food crates and put wheels on them and go for it down paved roads and hills. It is hard to figure out who was the first person to put wheels on a straight board or plank.

Who knows maybe Leonardo da Vinci invented such a thing and it just never made it into one of the sketch books which was salvaged?

By the early 1960s skateboarding was becoming pretty popular and there were down hill racing contests like down hill skiing. Kids would practice and look forward to these events. There were *free-style contests* also and folks would do tricks and there were judges like ice skating. Of course, the skill-level of tricks were nothing compared to what kids can do today. Some of these home-made or rudimentary skateboards were dangerous compared to today's surfboards.

The rubbery-plastic **urethane wheels** did not become available until the early 70s and in the late 70s skateboarders saw the first curved tails to help in pivoting tricks and maneuvers. The first skateboard parks also came into existence in the 70's and this gave the kids a place to practice and try-out new tricks.



In the 80s skateboarders would use video cameras to record their trick maneuvers and many of the *free-style* moves got more progressive, difficult and impressive. By the 90s it was totally out of control and extreme skateboarding helped increase the popularity. All of this fueled custom *skateboard sales, shoe sales, sportswear and accessories*. The industry was growing up and getting serious.

Today the modern skateboard is an engineering marvel with racing parts, exotic alloys, awesome graphics and specially designed components worthy of the latest fighter planes. Of course this is still only the beginning, as now there are **high-tech skateboard video games** and next comes **Virtual Reality skateboarding simulators and Hover Boards**.

Problems; Friction, Slow, Heavy and Hard to Ride

Indeed, we can only imagine how hard these early skateboard contraptions were to ride. Perhaps you have tried to ride such a contraption yourself? I can remember personally as a kid using old trucks off an old skateboard bought at a garage sale and attaching them to a board and rolling down a long driveway.

Of course at 7 years old you are not much of an engineer of anything you build or design, as your inventions are generally perfected through *trial and error* or you crash and burn. I still remember what happened going down the driveway. I started to get the *high-speed wobbles* and eventually they got worse and worse and the whole thing dumped me onto the driveway and I crashed, sound familiar. Millions of young boys started out this way.

Un-deterred I simply went back to the top of the driveway to try it again and again. And what do they call the definition of insanity; doing the same thing over and over again and expecting a different result? The results were quite simple to see on my elbows and Hands. Back to drawing board; adjust the trucks, use bigger nails (I had no screws) and borrow a *little duct tape* out of the garage too. Engineering indeed? I guess everyone wants to ride when they are young and skateboarding is easy enough anyone can?



[Popular Humorous Skateboard Blog Image]

You can imagine how excited I was to get my first *plastic* skateboard with the *urethane wheels*. Of course the other kids with the more high-tech skateboards that were fully customized laughed at me, but you have to start somewhere and they also had to start with plastic boards too. Where do what you think I got the old trucks and wheels to do my driveway experiments? One of them sold the *hand-me-down board* to me at his family's garage sale.

You see the problem was not that the wheels or trucks were of poor quality, they worked fine on the old plastic skateboard, but not so well on a much longer board that was perhaps five times the weight. Eventually, I figured out that, I had to tighten up the trucks and pay particular attention to my own balance and that helped a little until the *wobbles* started. Thus I can easily imagine the problems that the early kids between 1905 and 1950 had with their skateboard devices.

How Skateboards Are Made

Most skateboards are made of wood and there are certain woods that are preferred by skateboard manufacturers. One of the common types of woods used comes from Maple Trees. The wood is cut into very thin slices or veneers, which will be *laminated together during the manufacturing process* using glue very similar to how plywood is made.

The glue or adhesive is sandwiched between each *thin-flat strip of wood and pressed together* and allowed to dry. If the skateboards are to have kick-tails on them, the wood will be pressed into that particular shape. Next the skateboard will be cut out from the wood and holes drilled where the trucks will be mounted underneath.

Once this process is completed it is time to for the boards to be sanded and finished. Then various chemicals and finishes will be applied and then they are ready for *custom graphics*. Then the coatings, graphics, silk screens will go through a drying process, generally in a big rack and for a specific time period. Last nose guards or other incidental extra features will be attached and then boxed and shipped to the retailer.

Plastic Skateboards are made of several different types of plastics and are relatively easy to make in large quantities by using *injection molding manufacturing processes*. This is an example of an old early 80s plastic skateboard.



Most Plastic Skateboards are considered cheap compared to the wooden skateboards. Still not all plastic skateboards are flimsy or to be considered lesser. It really depends on the type of plastic used. Most riders like a fairly firm board for tricks with only a little give in the center for hard landings and spring action. Most all Carbon boards and composite construction boards can hold up to the scrutiny of comparison and there are some riders that prefer them.



Skateboard Trucks that hold the wheels are one of the most important components of modern day skateboards. Generally they consist of an axle, triangular shaped hanger and a king-pin bolt. The trucks are bolted to the face-plate, which is bolted to the skateboard. The king-pin can be loosened slightly to allow for more or less rigidity making the skateboard able to turn easier or ride stiffer for steering.

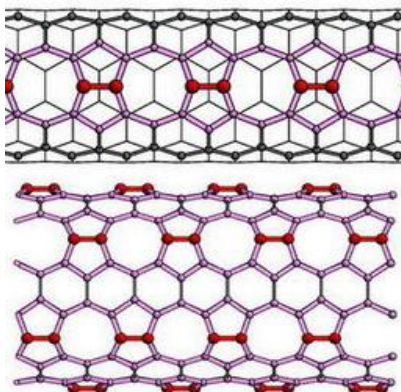
The rubber grommet helps take up the space when a looser setting is chosen. Thus it can be adjusted for the rider's skill level or type of riding the rider will be engaged in. This is how most current skateboards are made and the mechanics of how they work, but all that is about to change in the near future.

Hover Boards; Skateboards of the Future

The skateboards of the future will be hover boards and if they are to fly they will need to be made out of lighter materials. What materials might they be made of? Chances are they will be made of *Carbon Nano Tube construction, graphene or ultra-light weight composites*. Most plastics such as polyethylene and polypropylene are way too heavy and wood simply won't work.

This means the current manufacturing processes that are used to make skateboards will have to be changed along with the materials. This transition may upset the industry and some of the riders and there will be resistance to change. The resistance will be similar to what we saw with skis or choosing to go down the slopes on snowboards.

Most skiers were reluctant to switch to snowboards because they called themselves purists, but over time many tried the new snowboards and enjoyed them very much and never went back to skis. Will some skateboarders be afraid to fly or worry about the injury risks associated with high-tech hover boards?



[Carbon Nano-Tubes - Physics.org]

The allure of being able to fly on a skateboard has a tremendous sales advantage for the manufacturers of hover boards, although they will certainly be seen as disruptors of the industry and current technology. Over the last five decades the sport of skateboarding has increased incrementally and become more exciting each year. However, skateboarding has not seen its greatest leap in technology quite yet and the hover board will change all that.

How is Carbon Nano-Tube construction done? Currently Carbon Nano tube construction is very expensive and there are several prototype manufacturing methods, none of which are producing the economies of scale for all the potential applications. Therefore its use and applications have been ultra-high-tech such as military and space. In the future of course Carbon Nano tubes will be used for *bicycles, golf clubs, skateboards and car bodies*.

In fact, Carbon Nano Tubes will be used any time weight and strength are an issue and that is usually all the time meaning that Carbon Nano tubes will be used in nearly everything. *Carbon is plentiful on planet Earth* and there is no shortage, it is only a matter of the manufacturing process - as costs come down in manufacturing the number of applications will increase until everything is made and Carbon Nano Tubes.

Future Designs and Styles

What will the future designs and skateboards look like? If the skateboards are to fly and operate like hover boards then chances are they will be quite a bit different from what we are used to. For instance we know that hover craft have an interior area underneath to trap the air in a *ground effect* fashion.

We also know that hovercrafts *blow low-pressure air underneath at one to two pounds per square inch*. To lift a 180 pound human does not require too much air flow close to the ground while in the ground effect. But as the hover board gets higher the low-pressure area escapes and as the hover board moves faster the air gets away.

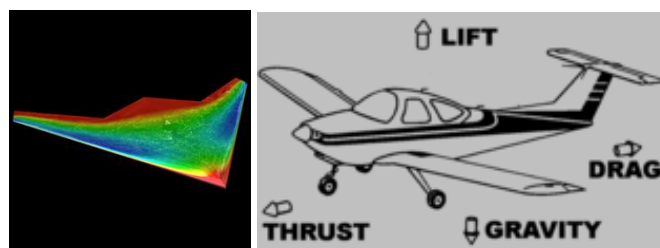
Any future design of hover boards will have to take all this into consideration. The mechanism which blows the air also takes up space and this will have to be part of the interior of the board. Therefore the board will have to be very light and hollow inside and a little thicker or taller to contain the mechanical part.



Our drawings show an additional 4-5 inches in height with an additional 2 inches below the board. Hovercraft need quite a bit of air and therefore the Hover Board will also have to be designed in such a way to collect the air as it moves forward with a series of *air scoops and slats* which help redirect the air into the interior blower mechanism.

Too much restriction of the airflow will decrease the hover board's potential. This means the rider will not be satisfied with the speed, agility or performance of the hover board. The board will also need a spoiler system to dump the airflow it does not need at times, as do hover crafts.

The design must also allow the hover board to produce *enough lift*, through normal aircraft wing aerodynamic theory to support five times its weight during forward movement. A wing shape with side gates will need to be incorporated into the designs (Bernoulli's Flying Wing Concept-plane) or an advanced stealth flying wing design might be viable as well.



Of course the shape of the hoverboard in reality is certainly not limited by the current shape of a skateboard. There is no reason to follow the rule of *incremental change* when we are about to revolutionize the entire domain of skateboarding. If you consider why our modern day trains run on narrow trucks you will see my point here.

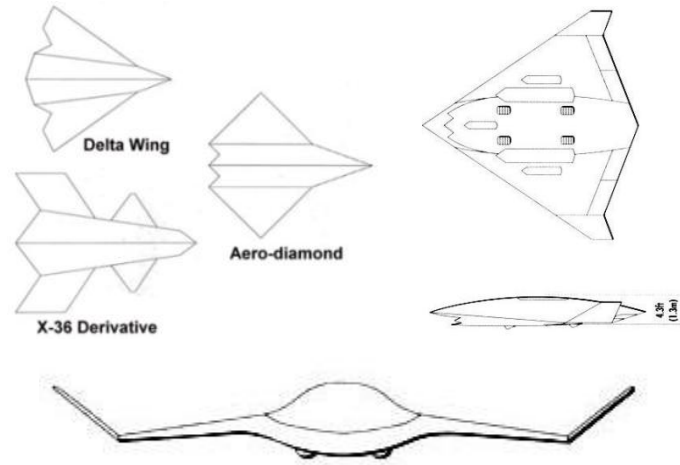
You see, in the early days man traveled by foot and made trails due to wear, generally following trampled brush and animal paths. Then man traveled on the backs of domesticated animals. The horse was a perfect animal for this and eventually all the trails were one horse wide, but then no one could pass coming from the other way. The paths and trails became two horses wide. The horses made indentations in the dirt and then they would fill up with water and make ruts.

When the wagon was invented the wheels had to be the same distance between ruts to keep it level. Next came the train, tracks were laid in the ruts still the same basic distance apart and the wheels on the train were built high to clear the bump in the middle. Indeed nothing has changed, *trains still have narrow wheels* and are completely unbalanced and top heavy today.

Let's not make the same mistake with skateboarding or propose the same shape for hoverboards. These future hoverboards can be any shape, we are unlimited in thought and must consider potential shapes such as for instance;

- **Spade Shape - Deck of Cards**
- **Manta Ray Shape**
- **Frisbee Shape**
- **Triangle Shape**
- **Stealth Fighter Shape**
- **Pentagon Shape**
- **Tear Drop Shape**
- **Oval Shape**
- **Bernoulli Flying Wing with Gates**

Whatever shape is chosen it must provide the aerodynamic solutions for our challenges. It would be smart to stay away from shapes that are too wide because as the rider turns the sides would hit the ground and the lower the unit hovers the better the performance when in **full-ground affect**. Indeed the wings would be fatter more rounded, shorter and less swept with more camber. The point is we are not bound by the shape of the present period skateboard, as we are talking about the Future.



Additionally another important point is that we must not waste any airflow in our design. Thus air which is blown underneath will need to be *re-used thru a series of design shaping strategies* to force that air back along the aerodynamic structures of the hoverboard body.

The goal is to build a hover board which can *travel like a hockey puck on an air-hockey table; very fast and maneuverable*. Then use that speed to gain lift from the relative wind and use deflection strategies for maneuvers and tricks, jumping and clearing objects. Since forward flight does exist also the rider will employ angle of attack strategies as well as basic propulsion.



If the rider decides to slow down or turn directions then they will simply pivot the board into the relative when and use that to slow down and change directions. *During this transitional flight phase* the airflow coming in at the bottom of the hover board will need to be trapped and redirected back around thru the turbines rather than fighting them so the rider can zoom off in the other direction.

One other consideration to all this is that the rider's feet or shoes will get in the way of the airflow and since they will be adjusting their feet position for stability, it makes sense to have a raised platform where the rider will stand away from the actual board. In doing this the ***Bernoulli Principle and venturi effect*** might also be employed forcing the airflows to speed up between the top of the board and platform and into the intake area for the hover blowers.

All this is possible but it will radically change the design and looks of what we consider to be the *modern-day skateboard*. The futuristic design will be very cool looking and like nothing you have ever seen before. Will it fly? Yes and like nothing else you have ever seen either.

Back Packs and Accessories



[www.Onecoolhunt.com]

Since the hover boards of the future will be larger and taller than traditional skateboards they will require a little more room to be stored. For kids using hover boards to go to high school or using them on college campuses to get to and from the dorms, apartments or their homes, special changes will need to be made on their backpack storage systems.

A few hover board designs which had been kicked around at the Online Think Tank discussed inflatable sections of the board. If parts of the hover board can be deflated then the hover board can rest in a sleeve on the back of a *custom designed backpack* similar to the ones that kids use to put their schoolbooks in.

Once done with class the rider will have to re-inflate the hover board; this can be done by a utilizing a couple of simple strategies. A small *pump mechanism* can be incorporated into the backpack and operated by a battery charged by flexible solar panel which is part of the back pack.

The small pump would be engaged after the hover board is turned on which will allow the airflow directed into the inflatable parts. This would fill up the hover board like a balloon (half-way), but additional air pressure will be needed to fully inflate. This is where the small pump mechanism comes in.

The backpack storage device for the hover board will be an integral part for the rider. Currently skateboards are often put into a sleeve in special backpacks with *Velcro straps*. The hover board will follow this tradition with only an incremental change as needed. Those who designed backpacks for schoolbooks will also get into the hover board backpack carrying business.

Currently there are several patents for backpacks that hold skateboards and if you go into any skateboard shop you can see the current designs and models; these will all be changing as the number of hover boards increases into the market. There are some inexpensive skateboard holding back packs available at Wal-Mart.

The market potential for hover boards is most likely about 35 million users in the United States alone. Much of this will be determined by cost and efficiency of economies of scale in manufacturing, along with current economic conditions.

Accessories for hover boards will be as common as accessories for new iPods, BMX racing bikes or ATVs. There will also be new attire, safety gear and the incorporation of communication systems within the hover board; all available online in Internet Stores and in specialty skateboard, hover board and surfing shops. Net centrically speaking the backpack will be an integral part of hover board use in future society.

Interactive Skateboard Parks

Skateboard parks are a wonderful place for kids to practice and hone their skateboarding skills. Skateboard parks are a place where youth can enjoy themselves and challenge their abilities against other kids in competition and learn about mentorship and creativity. Of course as more technology is introduced to the present sport of skateboarding we will see revolutionary changes.

During extreme skateboard competitions we see that riders can choose their own music to get them into the zone and wow the crowds. We will also see *laser measuring systems* which tell how much air or height each rider coming off a ramp has attained while special timers measure the hang time. Digital Clocks and fog-horns are used to time routines and tricks and level the playing field allowing the best man or woman to win!



[YMCA Skateboard Park USA]

In the future directional sound will be used to alert the rider how much time is left on the clock or how high the rider went on the last ramp or even call out his speed approaching a ramp. Directional sound can also be used for the music and only the rider will hear it.

The riders will also be able to pick up a complete recorded routine to play on their computer to increase their skills. For instance, the skateboard park will be set out in a grid and the rider will have an **active matrix RFID tag** [Radio Frequency Identification Tag] in his shoe which will record every motion. The rider will be able to go home on his computer and see the speeds, directions and evaluate his performance so that he might achieve even greater results next time.

These technologies will not only be available for competition but also at the local skate parks with Digital Equipment and for a small fee the rider can buy a CD-ROM which was burned by the *skateboard park's digital nervous system*. These technologies will also help pay for the skate park's upkeep and maintenance; perhaps even fund future expansion projects.

Digital pictures and digital video might also be incorporated into skate parks. These digital pictures and videos can also be used on the rider's *MySpace* or *social networking web site*.

The research gained by all this data can be used by skateboard park designers to make better skate parks, learn which ramps are most favored and to make the skateboard parks safer. As future hover boards come into place all the systems will already be available to make the experience totally awesome.

Rainy Day Video Games (VR Living Rooms)

With interactive digital skateboard parks we will also see a whole new wave of digital recordings for skateboard riders. Through CAD/CAM technologies and digital video will surely come the video material needed for *virtual-reality skateboard parks*, where the rider stands on a board in his or her living room, which is mounted on a platform in front of a large high-definition flat-panel screen. At first these systems will show up at theme parks and then eventually be incorporated into the lineup of videogames by *Microsoft* or *Sony*.

You can expect these virtual-reality living room games to be used by kids during rainy days or inclement weather. As more and more people buy these systems the prices will come down. Currently these technologies are not as expensive as you might think because the skateboard can be mounted on the platform, which will record the speed attained by the foot motion and as the rider leans from side to side that also will be recorded and displayed on the screen.

The Online Think Tank estimates the Virtual Reality/Video Game Immersion Industry to be well worth **5 Billion Dollars by 2012** and **grow by over 8-15% per year**. Skateboarding or Hover Board type augmented or virtual reality gaming will be a sub-sector of that market, which once introduced will surely grow along with the total market.



Interactive virtual-reality games such as this are good to help a rider practice without getting hurt doing very complex trick maneuvers. It will also keep young riders active during bad weather and give them a workout, meaning that we might prevent onset juvenile diabetes. Not to mention that such a *videogame/virtual-reality system* will be extremely fun, challenging and exhilarating, especially for grown up kids who cannot perform as well as they once did in their youth. The '*glory day*' reliving of the Baby Boomers and X'er childhood will be a percentage of the users.

For folks over age 40 chances are they will not wish to risk injury on a high-tech hoverboard of the future doing tricks however they might consider using it for local transportation. It has been noted that the electric powered skateboards manufactured by a Florida Company can keep up with traffic and are enjoyed by folks up to 60 years old and very popular with the over 30 crowd. They are used for fun and local neighborhood transportation. One mother and medical doctor, Dr. Nathalie Fiset asks;

*I am wondering what physical abilities one needs to use this device;
Is it more like surfing? Will we see grandmothers on those soon?*

This is a very important question and a Hover Board would most likely not be ridden by anyone who would not feel comfortable getting on a regular skateboard however, as the technology is refined we will see these hoverboards available to everyone. The trick or *performance sport Hover Boards* will be made for kids and pros, while other models will be developed for the rest of the consumer and commercial markets.

Of course everyone might enjoy and exhilarating Virtual Reality ride in their living room and that will be almost as thrilling as the real thing. In a way hoverboards operate in a similar fashion to surfboards, although realize that ocean water is 750 to 800 times denser than air at sea level, making the Hover Board much more agile and extremely responsive.

Depending on the design and number hover units underneath or the model type it will be easier or harder than a surfboard to ride. The great part of the technology is that a grandmother can experience the same sensation in the VR Living Room, as her grandchildren experience out in the neighborhood, at a skate park or on the family driveway.

Professional skateboard riders could sell their best trick performances to an online trading system such as on eBay, so others might try to match their skill or for just pure entertainment by slipping the CD Rom or performance storage cartridge into their living room gaming system. This would allow riders who spend all their time skate boarding the ability to earn a living for their efforts. It would also be a good way to get additional content for videogames or to be used in Hollywood movies.

Holographic virtual-reality living room gaming is on its way and this will allow a rider to experience a near reality skateboarding session totally immersed in the activity. It will also give the rider confidence in his or her ability to *overcome fear, build self-confidence or attain an expert skateboarding level.*

Chapter II

Hoverboard and Skateboard Mechanical Components

Present-day skateboards are actually engineering marvels, but they have been so refined that they are quite simplistic by today's high-technology standards. Perhaps this is why they work so well in that they keep it simple; a founding principle of good solid engineering. There is not much to a skateboard once you have the board, the trucks and the wheels, everything is pretty straight forward. The boards are made out of plastic, wood or composite materials. The trucks are made out of combination of alloys and the wheels are made out of urethane.

Not only are there few parts, but the manufacturing allows for some stiff profits by the time the brand marketing techniques are applied to the teenage consumer mind. Everyone wants a "rad" skateboard, didn't you when you were young? I know I did. Perhaps why the skateboarding industry approaches or surpasses the *billion dollar mark during peak 10-year industry sub-sector cycles*? Some say that high fuel prices increase skateboard sales as the parents are less willing to drive their kids to various activities in the gas-guzzling SUV or mini-van?

Hoverboards are quite a bit more complicated than actual skateboards. You see, hover boards must have their own propulsion system and a radically new design to be able to fly. A hover board by itself is fairly easy to make, but making one which supports a human being is a lot trickier.

For a very small board to lift up a human being using current technologies is not completely impossible but the board must also support its own weight, motor, blowers, electronics and/or fuel before it is ready for the human rider. Even if the unit is powered by a battery, batteries still take up weight.

Making the hover board very light is a must, but there's only so far you can go before you hit a hyperbolic curve of diminishing returns. It would be nice if the skateboard riders did not weigh so much and if they would lose a little weight, but we cannot count on humans to watch their diet judging from the current obesity of American societies.

With or No Wheels

Everyone knows that skateboards have wheels and they might have guessed that hover boards will not need wheels; or will they? If you can build a hover board with wheels then that will make it easier for landing, but it will not make it very aerodynamic and it also adds weight. If something is to fly it is important that it is as light as possible.

If a hover board loses its air underneath or its ground cushion it will settle back to Earth and then when it touches the ground too fast and goes thru the ground cushion the rider will be stopped as if he hit a rock on the sidewalk that stopped his wheels. This will deject the rider and might cause injury or worse hurt the *rider's pride*. Generally skateboard riders have the agility to keep from injury due to minor stoppages.

So the question is should hover boards of the future have wheels or should they have no wheels? The question is simple enough and yet the designers of the hover boards of the future will have to decide whether to put wheels on their innovations or not.

Due to the adoption process of those who were engage in early technologies it might be wise to have wheels on the first hover boards and sell people on the ease of the transition. Although in doing so (adding wheels to the first production) performance will be lost on the hover board and decrease the potential excitement for the rider. This might cause a *backlash against the new technology of the hover board* and prevent it from attaining the attrition rate needed with new trends and technologies.

The smaller the hover board the more agile it will be and the more fun to ride. It makes sense if we are to introduce hover boards into the skateboard market that we must completely consider the "**WOW**" factor for the rider if we wish them to ditch their current wooden skateboard for this new technology. Once again let us consider snowboarding versus skiing and how the snowboarding trend eventually overtook skiing and revolutionized the sport.

Landing Gear Retraction

One technique to solve the problem of hoverboard wheels is to make extremely light weight wheels for rolling or very hard landings. One great thing about hover boards is that they use the "*ground effect*" and reduce the strain on ankles on landing, yet skateboarding is currently about gaining momentum and then thrusting into the air, which means riders must adapt to new techniques or designers of hover boards must *pony up* to the reality if they are to expect early adoption from mass market exploits.

One great thing going for Hoverboards is that they fly and flying goes very deep in the desires of mankind. How would the landing gear be activated? One thought is to have a set of tap push button controls on the hoverboard for acceleration of hover motors and another to put up the landing gear, making the skateboard into a full-hoverboard. "*Three in the green*" and away they go hover board style?



[Joe's Hoverboard Online Gallery]

Then if the landing were to be very hard or a rolling landing (airplane runway type rather than helicopter style) then the rider could tap the push button control to extend the landing gear and yes this would require lots of practice by the rider to become proficient. One thought is to have a fixed landing gear which was aerodynamically part of the design for airflow or lift.

Engineers are now designing the skateboards of the Future and are thinking here along with the Online Think Tank. The skateboards will really be flying hover-boards and much like the Hollywood Movie *Back to the Future II*, with *Michael J. Fox* and Biff. One interesting dilemma for these designers currently is should these skateboards-hoverboards have wheels at all - With Wheels or No Wheels - should they have Landing Gear Retraction?

This is something that *will ultimately be a compromise by designers and engineers* and the desires of the riders purchasing the hover board technologies in the market place. Performance is on everyone's mind and so the mutual goals appear to be inline with each other.

Wheels Without Friction

Wheels have always been an integral part of skateboarding and yet this is all about to change as the era of the Hoverboard is ushered in. Remember wheels on the ground cause friction and that means slower boards. The whole idea of the hoverboard is to reduce friction and increase speed like a *hockey puck on an air-hockey table*. When wheels are involved the boards are slower and will be much less maneuverable and of course this directly corresponds with a decrease in the fun factor.

If you will recall in the Hollywood Movie "*Back to The Future II*" there were no wheels on the hoverboards and you can see the increased exhilaration that the rider experienced. Of course as skateboards turn to hover boards in the interim skateboards will most likely be some of both; that is to say they will be more like Hover Board Combos.

For a full transition of skateboards to hover boards we must *ditch the wheels*, but this will not be as easy as it sounds. Indeed, we may even see *frictionless wheels without bearings* which will really increase the speed and performance of skateboards. **Magnetic wheels** if introduced before Hoverboards may lengthen the time to full adoption of hoverboards by as much as a decade. This is because something as revolutionary as *frictionless wheels* will give the skateboard new life blood to keep the industry sector going with increased sales, sponsorship and marketing dollars.

Any leap-frog technologies will then need to out perform the new skateboards with *magnetic friction-less wheels* by quite a bit to cause consumer migration to those new technologies. Still the first hoverboards for the skateboard market will most likely have to incorporate the *friction-less wheels* if they become available prior to wide spread hoverboard use. Therefore it appears that although these two technologies are diametrically opposed and competing, they also can compliment each other.

For instance let's say that magnetic wheels are introduced into the Skateboard Market in six months; this will cause a new rotation upswing in the typical **decade long skateboard market sector**. Therefore the perfect time to introduce the new hoverboards of carbon nano-tube construction will be at the top of that natural product cycle and industry sub-sector top and begin a new product cycle in an already *hyper-invigorated market segment*.

Back to The Future and Sci-Fi

How realistic was "***Back to the Future***" in predicting the future of hoverboards? Well, probably not so far off. And although not a lot was explained in the movie about how they work, it was easy to see that they got the part right about how much fun they might be. Is any of this really feasible with current technology? Sure, it is only a matter of R and D, mental will power and a pot of gold (ROI) at the end of the rainbow (journey). A sharp entrepreneurial team could bring this Hover Boards to market and develop this technology to be ready in under 3-years if they had the vision, strength of character and determination to go the distance.

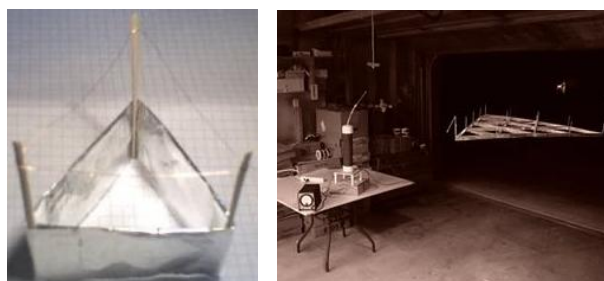
When trying to make any object fly one needs to employ the sciences of physics and aerodynamics and it sure pays to know a little about engineering as well. When looking at building the first *flying skateboard* which would be fully controllable by the rider just like a high-tech skateboard we looked to our Online Think Tank for answers. There is really no barrier that is too insurmountable in getting this done on a reasonable time-table.

Indeed, there seems to be a few schools of thought in looking at solving the problem and challenge of building a couple of fully functioning *hover board prototypes*. At first we noticed that there were two basic mindsets on our Think Tank Hover Team when it came to Hovering Theory, thus we were some what divided into camps.

- **Old School blowing low pressure underneath - like a hover craft.**
- **Use of the *Coanda Effect* the type of airflows helicopters use amongst other techniques to get them to fly.**

After discussing these concepts a while several folks on the Hover Board Think Tank Team considered a radical departure from these methods. Many discussed anti-gravity devices thru frequency manipulations, although currently this requires more power, meaning more weight to run a vibrational frequency device in the future this will be possible.

There are many theories on this from combining different frequencies to disrupt gravity waves or create combined waves that will cause a specially shaped skateboard to lift. Currently such technologies are not yet available, but groups like HoverTech.com run by Bill Butler see a day when this will be possible. Below are Tim Ventura's anti-gravity experiment prototypes.



[Tim Ventura's Anti-Gravity Experiments - Rense.com]

These concepts seem pretty cool although the power requirement would be very high and so far to day no one has been able to lift anything heavier than a small mouse and even that took a rather large device and a lot of external power. Lifting a 90 - 180 pound human in motion means the board must generate the energy itself, as even a *flimsy light-weight Triangular Shaped unit* that is 3 feet on a side can only lift about 100 grams.

Indeed such an anti-gravity lifter would have to perform incredible feats, which are currently impossible and do so without *high-frequency pollution risks* to the human bio-system is another story entirely. Our Think Tank believes that this simply is not feasible, but is hopeful that with proper R and D and funding that in the future some excellent applications may be possible thru anti-gravity lifter technology, but alas it probably will not be on a Hover Board. Bill Butler's HoverTech project is on the leading edge of this technology searching for a breakthrough.

Others on the Online Think Tank Hover Board Team during a brain storming sessions came up with a concept of inciting *turbulent eddy flows* to pull the board and rider up like a Tornadic Cell sucks in trailers at a trailer park. This would use a combination of relative wind and re-directed air from the hover motors over the upper surfaces of the board.

In doing this the rider would need to be placed above the top surface where the eddy flows move, perhaps a secondary raised platform where the rider would stand. Several designs were considered and a design using these strategies of fast moving eddy flows does indeed have significant relevance.

One gentleman came up with an idea to use a combination of *Deflection Lift, Coanda Effect, Low Pressure and air thickening by way of molecular alignment of air molecules* by way of ionization thru directional frequency strategies. He said he believed that this was the answer. This makes perfect sense because thickening the air, increases the buoyancy of the board and rider.

Combining this with the other methods means a synergy of strategies increasing potential. When asked more about this we got into heavy physics and he had many theories on this including one he called "**Banana Peel Propulsion**" which is quite interesting and could work for a larger system, Blimp or a dirigible UAV.

So perhaps a combination of strategies is inline with realization of *flying skateboards*, after all they need to lift a lot of weight considering their size and move it along very rapidly if they are to be any fun and excite the rider; allowing them to do new tricks and keep the crowd on their feet. Flying skateboards are on their way and they are coming fast, jump on!

The advances in *flying skateboards* or hoverboards will provide transfer technologies to everything from better aerodynamics for vehicles to aerospace efficiency increases. Thus any undertaking in this "teen entertainment" sector has transfer technology potential which is far-reaching. Did someone say flying cars?

Propulsion

Let us put skateboarding aside for a second and consider *hover craft designs, hover boards prototypes* and the reality of the forces of nature that they must deal with to perform. Let's explore both on planet and off planet activity for a moment to fully grasp what is going on.

One of the biggest considerations of Hoverboards will be the need a very *efficient propulsion system* which is low-weight and powerful enough to over come issues with air-resistance as speeds increase. Hoverboards which are used on Earth will most likely have speeds of up to 45 miles per hour or less due to hyperbolic coefficient of drag curves as speeds increase. Since these technologies will be used where the air is most thick near the ground this makes sense.

If these technologies are to be used on other planets they may be able to propel the rider or a robot at much greater speeds without dealing with the thickened atmosphere, of course it will have to move a lot more atmosphere (air-using the term loosely) because it will most likely be thinner. Still this provides yet another consideration, as the hovercraft or hover board must work harder to lift the weight provided the planet is similar in gravity. If less gravity, one could design a hover board planet surface rover type exploratory device that would be quite efficient indeed.

Now let's get back to Earth and remember our goal is to propel a 90 to 160 pound kid around at a pace, speed and maneuverability that is desired by a human in their prime of life one filled with abundant athletic ability and agility. That is what we are really talking about and we must remember that we have somewhat fixed challenges to overcome here on Earth.

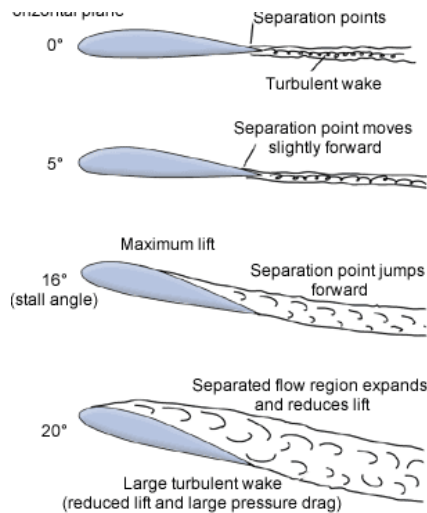
- **Air Resistance**
- **Gravity**
- **Maneuverability**
- **Hard Ground**
- **Speed Needed to Excite Rider**

With regards to air-resistance we can excite the rider at speeds less than 35 miles per hour and thus item number one can be overcome. Gravity can be beaten by proper use of airflows, aerodynamics, ground cushion, low pressure and perhaps *air-ionization thickening strategies*.

Once we have good physics in place to overcome these issues, we will rely on the ability of the rider to maneuver the hoverboard. Indeed this will require experience and skill and some additional considerations of the physics of deflection of relative wind, lift and board aerodynamics in various positions during *transitional flight*.

Now then how much performance is needed? Well we know from high-speed motorcycle racing that no matter how much power you give a human being, they always want more power! We do however have weight limitations, which are not of grave concern for the hover technologies in the ground cushion, but get very serious as one gets away from the ground. Blowing 1-2 Lbs of low pressure under a hovercraft can lift unbelievable amounts of weight.

If the speed is maintained as the rider increases altitude then the craft or hover board will get some help from aerodynamic lift if the rider uses proper techniques to control the board and has the skill to maintain some relationship with flight.



A stalled out board that is too high off the ground will fall out of the sky and back to Earth, thus it will be the rider's responsibility to land up-right and *use the ground cushion to break his fall*. The hoverboard operator will need to think in terms of the old adage; "***Speed is Life***" and maintain the speed as he increases in height. Actually, considering that skateboard riders already do this as they "***Catch Air***" off ramps this should not be too difficult and in the end hoverboards will allow for greater height and better control once airborne, unless the rider makes a mistake and departs from flight; in that case all bets are off, good luck, as the ground cometh.

The ideal propulsion system would be a set of flat ion-lithium or lighter batteries, charged by a thin film solar cell coating of the hover board's surface and a way to use a fast-charge system via 110v electricity socket. The *blower units* preferably would be 4-6 set in a specific pattern below the board. Micro-Air Vehicle technologies utilized these types of blowers, they exist now.

So far there are quite a few propulsion systems that have been floated and there are several companies, inventors and entrepreneurs who have workable prototypes all of which hold keys to the ultimate success for the hover board of the future. Still many are more interested in other uses for these technologies other than a recreational high-tech skateboard or hover board. Dr Nathalie Fiset sums it all up with this statement;

***"I personally think I will be a better candidate
for the flying car than the flying skateboard"***

Yes, everyone wants a flying car and it seems Futurists have been promising these for quite some time. Although **Bill Butler** cautions us that flying in the ground effect close to the ground will not solve the problems of traffic and that really isn't flying anyway. The Hover Team Think Tank members agree with Bill about the **flying cars and "ground effect" vehicles**, as that does not change the calamity we are facing with traffic.

Actually it also makes cars a bit more dangerous in windy conditions or when big trucks passes that is moving a lot of air, it would *blow a Hover Car right off the road*. For kids on skateboards however, Hover Boards using *ground effect strategies* sounds so cool and well it seems like a very good place to start. Now if we can use a different technology to lift up the boards then that would be even better, because *hover vehicles are noisy, create dust* and come with several other issues that we must deal with.

Hover Propulsion Theories of Bill Butler

Bill Butler of HoverTech and one of the leading experts in the field of levitation and hovering theories and technologies has identified many potential methods for all sorts of applications from Hover Boards to Flying Cars and beyond. HoverTech has also built *several prototypes* and may soon make the break through needed and that will be a wonderful day for skate boarders around the world not to mention those who dream of flying cars; in fact it will change everything. Below are some of HoverTech's research areas and a brief explanation of the concepts.

Geomagnetic Propulsion - Levitation and Propulsion using the Earth's own magnetic field. Ideally suited for launching spacecraft, but could have terrestrial applications as well.

Diamagnetic Repulsion - Uses a powerful magnetic field to apply and equal force to every cell of you body. This technology has been demonstrated to levitate frogs and other small creatures.

Sonic Levitation - Using ultrasonic standing waves, scientists have been able to levitate small objects with sound. But can the principle be scaled up to levitate a person?

Hydrostatic Hovercraft - A hovercraft concept uses electrostatically reinforced water to contain an air cushion.

Electrostatic Repulsion - Theory explains different methods of electrically charging a vehicle so that it repels the surface.

Air Cushions - By containing air pressure rather than allowing it to escape, hovercraft can be made far more efficient. Electromagnetic force-fields, ferrofluid and liquid oxygen barriers are just a few of the ways presented.

Plasmagnetic Theory - This is HoverTech's exclusive concept that floats similar to a Maglev Train, but doesn't need a track.

Magneto-Ion Theory - A more efficient variation of HoverTech's Plasmagnetic Theory that uses ionized air instead of plasma.

Electrodynamic Propulsion - Includes an enhanced version of the popular lifer capability of producing as much as 30 times more thrust with the same amount of power.

Of course it is not as simple as that, but those are the basics and if anyone can build the Hover Boards of the Future using one of these methods it will indeed be HoverTech. Bill Butler and his team have been considering, designing and building prototypes since HoverTech was founded in 1991. Of course the HoverTech eBook, authored by Bill Butler; **Personal Flying Machines**, is a must read for anyone serious about flying into the future.

<http://www.hovertech.com/home/products/pfm.html>

There are of big differences between hovercraft or ground effect vehicles and what the consumers will demand in a Flying Car, admits the Hover Team Think Tank and perhaps this is best summed up by Bill Butler himself as he states;

"Flying cars and personal flying machines like jetpacks are a totally different animal and would involve exciting technology like geomagnetic Propulsion, anti-gravity, vacuum balloons, ionocraft, and beamed energy."

Steering and Control

As with the skateboards, hover board operators will be responsible for their skill level and thus need to consider this before trying any outrageously radical tricks or maneuvers. The rider provides the propulsion on a skateboard, but on a hoverboard, they will provide less propulsion, but rather assistance only for the hoverboard due to much less friction resistance.

Operator Skill and Agility + Solid Aerodynamic Engineering = Fun

The rider will of course be in charge of *Steering and Control* on a hover board, but the board will fly and this means softer landings, more air off the ramps and new tricks that have never even been thought of. But realize too with better performance will come serious injuries when mistakes are made and thus more skill, practice and perhaps high-tech training tools need to also be discussed prior to "*off the chart*" radical maneuvers by advanced and non-advanced riders.

Hoverboards which use *air-cushion strategies* blow a lot of air. Some of this air would need to be re-directed towards the rear of the board during forward flight. A series of thrust vectoring nozzle movements could do this or a gate which re-directs a percentage of that air behind the board aiding in forward motion. With a little assistance from the rider - foot pedaling - or jumping onto the board with forward movement would also get the board moving and with less friction, no wheels on the ground, it would continue once the forward movement was established.

Deflection strategies in maneuvers will also be employed by the operator for quick directional changes, although additional power will be needed to prevent skidding and complete departure so the operator can regain forward momentum and steering control once headed the other way. This is possible if the air-cushion is built up and the board is low to the ground.

If the rider drags his body, legs or hands, this will aid in weight distribution during abrupt transitional maneuvers from hover - flight to departure and back to control.

Actually it will be quite fun for an agile, athletic and responsive rider with advanced skills - skateboarding is full of such riders.



With a pivoting of the board, change in tilt and/or leaning of rider the maneuver can be made with the help of re-direction of airflow, increased power and air-cushion dump strategies. This of course will require new techniques to be developed by the rider or operator and some smart aerodynamic engineering, but it is completely feasible.

Hoverboard instructors and trainers as well as digital training tools, eLearning tools and virtual reality simulators will add billions of dollars to the industry and thousands of potential jobs nigh-paying fun jobs. Hoverboards may be outfitted with haptic sensors on the surface to sense the rider's weight distribution as he or she leans on one or more parts of the board, thus anticipating the rider's needs and adjusting accordingly and storing the information in memory by learning to work with a specific rider thru the employment of Artificial Intelligence strategies.

Materials and Weight

Much of engineers and designer's challenges in the building of the future skateboards or hover boards have to do with the Materials used and the weight. Luckily there are some wonderful materials which will soon be available and this will change so many industries, including the skateboard industry sub-sector.

All this is changing thanks to new space age composites and materials such as **Carbon Nano-Tube and Graphene Construction**. You can expect the skateboards to be light, thin and very fast, yes so light and fast that they fly even with a non-advanced rider like my self on top. Can you say "*See Ya!*" Because we are talking about some serious air! But it will still take an advanced rider to do the maneuvers that we currently see at the **Extreme Sports Games**, without breaking their neck. With this great opportunity and performance must come a sense of personal responsibility as well.

The question comes to mind, can you handle the new hover boards of the future; they will not be for the weak and certainly not for everyone. **This is not your fathers skateboard**, this is the future and it is coming fast so be ready for action. *No wimps allowed.*

How far has skateboarding come in the last 100 years?

The new materials are a far cry from the historical accounts of skateboarding around the turn of the 1900s that are in the historical record. Although they were mostly made of wooden baskets nailed to a 2 X 4 or plank, these concoctions do make up the precursors to the current modern day skateboard. The wheels, which were strapped on generally came off of roller skates; these were the earliest Skateboards.

Of course you can already see the problem with wobbling down a hill and crashing and yes they were dangerous. More than one personal journal tells of broken limbs and skinned up elbows, hands and knees, that's for sure. Indeed by today's standards they also had problems with Friction due to steel wheels and the wooden wheels broke fairly quickly when used.

Clay wheels which did not last as long really did not come along until the late 1940s or Early 1950s. Either way wood, steel or clay they were very slow compared to the urethane wheels brought forth in the 1970s. The old skateboards, which were literally Roller Skate-Skateboard combinations were Heavy and Hard to Ride and on a steep hill; darn dangerous. So how far has skateboarding come in the last 100-years? *A long way!*

The Future of Skateboarding Cometh

In the Future we will get the flying cars we were promised and the flying skateboards too. What Future Designs and Styles will we see? Will there be clothes attire to match and custom sportswear also? What about Back Packs and Accessories? Yes, all this will be available with the future Hover Boards, just like in the Science Fiction Movies.

Then there will be Interactive Skateboard Parks and for poor weather days also Video Games. Virtual Reality Skateboard Games for the Living Room, which will be so close to real that they will be just as fun. Will this future become a reality? Indeed and it is not if, but when?

Space Age Materials are indeed the single most important component fueling the innovation of the future Hover Boards. A Hover Board might look more like this, with less need for *Horizontal or Vertical Stabilizers or wings* since the rider uses his body weight to steer. Since the speeds will be lower the wing type areas would be fatter and incorporated into the board. If the board is powerful enough we can imagine a rider on top of something similar to the picture below.



In fact with all the Military UAV (unmanned aerial vehicle) and VTOL (Vertical Take-Off and Landing) R and D and new propulsion devices on the market means that there are a lot of small powerful hover motors and hover parts available today that have much more performance than ever before. So, it is time to strap "*Four of those on a board*" and usher in a new age in Skateboarding raising the sport to a higher new level. The technology exists now that can lift a person up and we are already half-way home in designing a board for any skateboard park.



[Honeywell Design VTOL MAV - Micro-Air Vehicle]

With a little miniaturization, imagination, good physics, aerodynamic design; who knows such a system might be the propulsion system inside the hoverboards of the future. Perhaps 6 or 8 little hover units inside, I bet the Honeywell Engineers will like that idea?

Indeed if someone can come up with a mathematically feasible Hover Board design there may be a **research grant** awaiting them; <http://www.hovertech.com/home/contests/index.html> . As it appears that some private investors are pretty certain that the hover boards of the future are just around the corner. The Online Think Tank would certainly be willing to write a letter of recommendation if you have a team willing and ready to engineer, design and build a Hover Board, because *quite frankly we want one!*.

Chapter III

Integrated Communication System

The Hoverboard of the future will have a fully integrated communication system. Currently there are Surfboards people can buy which are *WiFi enabled*, backpacks for hiking with built in *GPS* and *cell-phone, iPod, PDA, Blackberry enabled devices*. Well consider the personal hoverboard of the future with Voice Activated WiFi, iPod, VoIP, cell phone and IM. Sound appealing? Well the Online Think Tank thinks it is inevitable.

Voice Activated Controls

So you think you have a "*RAD*" skateboard is that it? Well, show it to me? Now I am not putting you down, because it was not all that long ago that I had a "Rad" skateboard too. Sims wheels, custom trucks, and an awesome custom board with graphics. So, I know what you are saying.

Nevertheless, now the newest skateboards are on the drawing board; ***Hover Boards***. These hover boards are a radical departure to current technology. These future skateboards - hover boards will have **Voice Activated Controls** and their own propulsion system to stay airborne. *Your voice is your choice*. If you think your hang-time is good now or you think you are catching some serious air, you just wait, as you will be able to send a text message before you land.

Voice Activated controls will allow you to start the hover board, turn it off or increase the power setting. Remember that the hover boards are not totally silent and so although there will be some voice activated ability for basic commands, chances are you will not be able to steer by voice command, instead you will simply lean and the board will sense your movement as you maneuver the board.

Hover Board Formation Flying (Swarming)

As the Online Think Tank got further into our study of the future of hoverboards, the skateboard market and the possible technology needed for it all to come to fruition, we noticed other rapidly advancing technologies in many sectors including potential military transfer technologies which will be available in 5-10 years.

So what else are software planners considering designing into the new hover boards? Well how about; *Hover Board Formation Flying* (Swarming). You and your friends can fly along and never crash into each other. These same technologies will one day be in all the cars on the road preventing accidents and allowing for efficient traffic flows where cars and trucks are driving or flying down a virtual highway at incredible speeds only a few feet or perhaps inches from one another.



[Clip Back to The Future www.frozenhoverboards.buy999.com]

There will be various settings for this, but the most common will be a system which allows the riders of the formation to average off the leader and then re-adjust as necessary, so a family or friends can fly thru the neighborhood together if they wish. *Anti-collision software and sensors* will also be available and have a tremendous number of applications as well.

Anyone who is a pilot knows that flying in formation is a lot of fun and it will be fun on hoverboards, as well using these special sensors and software. These features will be add-on components that will be enjoyed by sports enthusiasts.

Video Feed Sending via Wireless Internet

When you were a kid you most likely enjoyed video taping your radical moves on your skateboard and then showing them to your friends, right? No problem because in the future these systems will be built into the high-tech hoverboard. That's right; **Video Feed** and you will be able to send it all via *Wireless Internet*, along with you guessed it; **Instant Messaging** to make a statement like; "**2rad c me roc whooaaa!**"

Digital Cameras are becoming smaller and hold can store much more in memory, many are integrated now into cell-phone combination devices. Soon they will be completely integrated into the high-tech skateboard of the future, you can fly along, talk to your friends or get out there and do some radical moves and have the video feed to back it up and prove it, which you can send, save or put on your website.

EMT Alert Systems with RFID Active Tagging

Of course before your parents are not going to sign off on one of these expensive hover boards for the ultimate in your entertainment pleasure unless they are equipped with **GPS tracking** in case it is stolen. And you know parents will also demand **EMT Alert Systems** with RFID Active Tagging in case you get hurt? Consider the "*Life Alert*" systems for elderly folks incase they fall and cannot get up? Something similar to this will be integrated into the more technologically advanced Hover Boards.

The hoverboard will already have all the communication system available for these systems and it will therefore only be a matter of time before the entrepreneur or manufacturers of these Hover Boards figures out that the consumers want these additional features.

Cell Phone 5G Wireless Technologies

It appears that the 3G wireless is getting ready to be surpassed by 3G + and 4G wireless. This means that 5G wireless technologies are only a hop, skip and a hover flight away on the technological horizon. Since these features will be available no doubt parents will want to call your skateboard using the on-board Cell Phone **5G Wireless Technologies** and tell you it is time for dinner. Perhaps they will send you an Instant Message demanding that you fly home for dinner immediately if you do not respond to the first call?

Of course even if the Hoverboards of the future do not have 5G Cell-phones right away you can be sure they will have a compartment to store your cell phone and perhaps charge it also.

"Can you hear me now?"

Chapter IV

Advanced Skateboard Systems

So the question seems to be just how high-tech do we wish to make the hoverboards of the future? Apparently the sky is not the limit, so we must put on our thinking caps and determine what is possible and use a little imagination to figure out all the rest.

Yes let's build a *net-centric Skateboard* with embedded active RFID chips and let's give it the ability to dodge obstacles or incoming objects. Perhaps we should fix it with the latest *lidar, radar, stereo sonar and optical flow sensors*. Let's make all the components fully integrated with the skatepark and/or a Video Game, Virtual Reality C.A.V.E. or system or even a full on simulator.

Think for a second about the past, present and future of skateboarding. What will skateboards look like in 15-20 years? Have you ever considered that? Well, in the early 1900s skateboards were literally roller skate wheels strapped to two-by-fours and they were not very safe at all. In the future skateboards will come with Stability Control Systems similar to those required on new SUVs. No more *high-speed wobbles* on hills if your trucks are too loose. In fact your skateboard most likely will not have wheels at all.

Stability control and high-tech sensors make sense, but why stop there, as those are not the only cool features that the advanced technology skateboard engineers are considering. One gentleman from the Online Think Tank believes that they will also have **Holographic Projection** to set up pretend barriers to jump and fellow skateboard riders to try to duplicate their radical moves and tricks. **Holographic Projection Technologies** will soon be here and they will be integrated into the new skateboards and hover boards of the future.

What other outrageous and total awesome technologies can you have on the hover board-skateboards of the future? Well how about; *Mind Control - Human/Hover Board Interfaces*. Yes just like in the advanced **Apache Attach Helicopters**, you think and the board moves that fast, instantaneously in fact? Oh yah, now we are talking radical tricks on the ramp. If you think you are going to crash the board knows this and moves back into position; much safer too.

Of course the Skateboards of the future will also have on-board video cameras to film your best moves and tricks and you can play them back at home or thru the **Holographic Display**. We are talking about one-hundred percent pure adrenaline with *Replay Technologies to Share or Trade with Friends*. All this is in the pipeline and soon to hit the streets in your lifetime.

Stability Control Systems

Maneuvering skateboards upside down and controlling the Hover Board of the future will be a challenge. The engineers and designers are getting serious about building the skateboards of the future, but these will not be regular skateboards, we are talking hyper-maneuverable hover boards. Indeed one of the most serious questions is safety.

How can we keep the hover board systems safe for the rider? How will we keep them from dumping their rider when maneuvering upside down asks one Technology Expert from *Amherst University in Massachusetts?*

Great Question and for this important question of Hover Board stabilization, loops, rolls or upside down flight here are some thoughts;

We keep the skateboard or hover board in "**Positive 'G' Mode**" all the time. Just like doing a barrel roll in an airplane, hang glider, parasail or helicopter. If you start with a high-speed steep bank and carry it all the way around you stay in the positive G sector. In the special report from the Online Think Tank you will see two items in the report's *reference section; # 2 and # 8*. The board's on-board sensors will sense the weight distribution and adjust it for the rider.

Consider the Segway methods or the young scientist who has the Autonomous Motorcycle that competed in the **DARPA Grand Challenge**? This technology is available now and will be further refined in the use of wheel chairs, artificially intelligent robotic android assisted living units and similar gyro systems are used throughout the space, aviation, marine industries.

There are six axis communication antennas now used in many sectors. It is just a matter of size, weight, cost and **Moore's Law**. These sensors and systems will get so small that they will build a Mosquito size flying unit, and they are doing it now. This will help the stabilization system.

Most military Navy fighters now have *computerized flight control auto-pilot type systems* for launching off an aircraft carrier to dampen the buffeting and to prevent over correction by the human pilot. Also there are systems which prevent a pilot from departing from flight by making an impossible maneuver that the plane cannot do.

As the skateboarder puts in a command the board will move, but not allow the rider to be in jeopardy based on the level of play. You might be a beginner, but an advanced rider might turn that system off. Then someone will come along with magnetic boots to affix them for upside down flight without the use of positive G-force flying range techniques and that invention will add to the fun for the most advanced riders. The Skateboard/Hoverboard will merely become a "zoom-zoom" platform and it will have many uses besides just having fun.

The final stages of this technology in the future period will be a hoverboard controlled by thought, like the future **HUD systems** used in the *Apache Attack Helicopters* but the helmet used for skateboarding will be an ultra-thin cap of carbon nano-tube or graphene material to protect the rider and read the neuron transmissions using an ultra-sound stereo system on an extremely low power setting between the cap and thru the skull.

"Your wish is my command and control"

This is how Hover Board Think Tank Team envisions all these integrated stability and control systems will work. The question is; are the young riders daring enough to go for it? It appears that they are, at least all the kids we asked or collaborated with us on this research project that is.

Holographic Projection

How will the holographic projection features work on the hoverboards and what benefit will they serve the rider? The **Holographic Image Display** will project in front of the board so the rider can match it while flying to insure a perfect maneuver? This training aid assists in visualization so the rider will understand how best to control the hoverboard. It will literally walk him through a difficult maneuver or trick when it really matters most to prevent crashing or injury.

These holographic training features will allow a novice to go to an advanced rider status fairly quickly without the normal *trial and error* causing skinned elbows and knees or broken bones. Holographic Projection is a future technology which will be used in many technologically advanced industries as a method of training.

Mind Control Human/Hover Board Interfaces



In the more distant future of 20 years or more we will see the first mind controlled hover boards. These technologies will be used in space and military first and then the transfer technologies will eventually trickle down into skateboarding. Imagine using *Mind Control to send commands* to the hoverboard via thought. How will this work you ask?

Well, each rider will have their neuron sequence firing measured in a lab and get fitted with a custom mind-reading cap. The individual rider's mind will have been mapped using an **fMRI** sequence generator while they ride in a virtual reality simulator. The cap will then know how to interpret these neuron firings by way of an **extremely low power ultra-sound stereo wave sensor**. This will be fed into the system and the hover board will respond accordingly.

Lighting and Safety Systems

How will the safety lighting system on high-tech skateboards and/or hover boards of the future work? Well they will all run by LED lights which are charging as each bump in the sidewalk jars tiny components, like a shake-able flash light. During *daylight savings time* it is easy for skateboarders to hit something and lose control and crash. Mr. Bill Butler of HoverTech.com believes that these extraneous systems have no real value to the hover board design and where as he may be correct, parents are concerned about safety and night lights, so it has commercial value and this will be a major selling point in the market place.

Many of the skateboard riders that the Online Think Tank interviewed told us that crashing; sucks. When considering these statements we indeed agreed with them and smiled. Thus future skateboard designs will need to encompass a special; **Lighting and Safety System** to prevent these problems and the challenges of not being able to properly see rocks, debris or hard breaks in the sidewalks (due to tree roots or years of wear) at night.

LED Self Powered Lighting System

Indeed, we believe that the average sidewalk has enough bumps in it to power up the LED lights "NO PROBLEM" without adding too much weight. Of course such systems could also be great for bicycles, wheel chairs and even walking and jogging LED lights all integrated into an electronic pedometer system.

Of course for skateboards it is essential to keep them small, light and maneuverable and thus the lighting system must be **low wattage**. Meaning about the only possible system that can be used would be an *LED Self Powered Lighting System* run off magnets on the wheels or generating the energy as the skateboard goes over bumps. Consider the *Shake-able flashlights* if you will and how they work off electromagnetic induction principles then think about how these could be integrated into the skateboard.

Low wattage LED circuit boards could also run other systems on the skateboards or hoverboards to run all the electronics and to generate Holographic Images to use as a Holographic Training System when new tricks are to be learned. The rider would see the image in front of them and match its moves until they completed it perfectly and learned the new trick. Advanced riders could create, sell or trade the programs Online in Skateboard Image Exchanges.

LED Lights are great because they can come in many different colors. For instance a Wipe Out could be a "**Red**" flashing light and High Level Rad Move, which was successfully accomplished could be "**Green!**" Indeed, the board could have special effects too which allowed it to change Board Color or Modify its color based on the pace of the tricks or speed of acceleration.

The skateboards of the future will have advanced lighting systems and most likely use low wattage LED Bulbs and circuit boards, which are light-weight and ultra bright. All this and more will be part of the skateboards and hover boards of the future.

Chapter V

Skateboards at Work

Anyone who has ever ridden a skateboard knows that they make excellent and efficient transportation to get to one place or another. It is a lot faster than walking and a lot less tiring than running. In the future skateboards will become hover boards and they will ride along on a cushion of air. This will make them excellent for use at work. What sorts of jobs might skateboard-hover boards be good for?

Well how about for Security Guards who have to move around large facilities, aircraft hangers, military installations or important infrastructures? They will need to get around fast and response time is always important. What about US Border Patrol in areas they need to be on foot? Hover Boards will blow dust, but in many areas they can be used effectively. And if we are speaking of **National Security** and the use of hover boards or skateboards, what about The USMC or United States Army - Soldiers and the **Future Fighting Force**? It sure makes a lot of sense to be on a hover board rather than walking and if you need to move fast you can!

Indeed aid workers might also value the use of a hover board. They would be excellent for **Golfers** and Referees at Sporting Competitions or how about soccer coaches so they could follow the game of play in scrimmages? Perhaps new sporting events will be invented using hover boards? What about **Polo on hover boards** rather than horses - the horses might like it?

Rescue Workers could use a lift from hover boards and it makes sense for lifeguards at the beach to hover across the sand to the waves and surf out on top of the water to save someone. Then turn it off and let it float, put the person on and hover again back to the shoreline. You can see how important the skateboards of the future will be, as they fly into our work place.

Security Guards

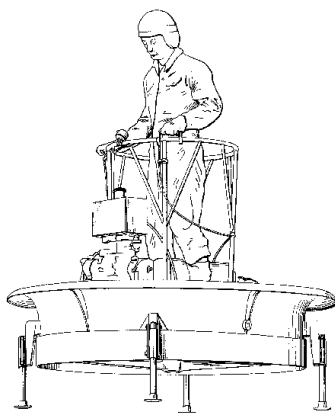
Security Guards using hoverboards will be able to cover much more ground than on foot and a small and maneuverable hoverboard is much more versatile than a Golf Cart type vehicle, car or pick-up truck. A security guard on a hoverboard could patrol a **Wal-Mart Parking Lot, Regional Mall, Car Lot, Oil Refinery or Government Center** very easily.

Hover Boards are perfect for **College and University Campuses** too. If there is ever a *shooting event* such as the one at Virginia Tech the campus police would be able to respond quickly and thus save lives. Also guarding cargo at the ports or the perimeters of large airports - another excellent use of a hover board platform to perform security endeavors.

It would be nearly impossible for a suspect being chased by a hover board to evade or get away. Several security guards on hover boards could easily cover 5-10 times the ground that security guards on foot could. Hover Boards make sense for security details and guarding important facilities.

Soldiers and Future Fighting Force

It is not the first time that soldiers on hover boards or such concepts have been floated. In fact the **US Army** has done tests on hover technologies and **VTOL Platforms** in the past - unfortunately the technology and the lightweight materials were not quite there yet. Due to rapid advances in material sciences that problem will very soon no longer be an issue.



A hover board regardless of shape that can transport one man safely and respond quickly to changes in direction will be a valuable resource for the **US Army's "Future Fighting Force Roadmap"** initiatives. The speed and agility offered by a hover board will allow the Military Police to do their job better. Hover Boards make sense for **Special Forces, USMC** and offensive military efforts to win.

Referees at Sporting Competitions

Hoverboards will make perfect platforms for referees of fast moving sports like Football, Soccer and Rugby. This will allow for better observance of play and increase the quality of the referees. Eventually hover boards with artificial intelligence would watch the play and make the call. Footballs, athletic shoes and soccer balls would be fitted with **RFID Active tags** for out of bounds calls and the unmanned hover board would follow the play dodging players and the ball.

Manned hover board platforms would provide rapid acceleration and the referee would never get behind the play. Fewer referees would be needed to ref the game *saving costs* as well. A league could easily afford the boards thru saving of labor costs.

Golfing is another sport that needs hover board technologies for caddies and players alike. Perhaps unmanned autonomous caddies will be the future of golf and the hover board platform will carry your clubs for you and then land beside you. The Online Think Tank envisioned active **RFID tags** in golf balls and the hover board robotic caddie would hover to your ball, even if you lost it in the shrubbery. The hover board would find it for you and then park itself nearby for you to select a club and then you would send that ball back to the fairway or onto the green.

Rescue Workers

Rescue Workers and hoverboards are a perfect combination. Consider if you will after a Massive Earthquake and roads are out and there is no way to get help in by way of vehicles. A medical **EMT team on hover boards** could quickly cover lots of ground. In areas that are flooded hover boards could cruise over the water to reach people who need help.

Firefighters battling a blaze could use hoverboards to escape *fast moving wildfire flames* from forest fires. Hoverboards could be used for fast or rapid water rescues as well. Fire Jumpers are listed as one of the most dangerous occupations, but perhaps Hover Boards could tip the balance and save lives.

During the 2005 Atlantic Tropical Hurricane Season we saw incredible devastation, particularly Hurricane Katrina, which slammed into the Gulf Coast and later when the levee broke and all the roads were out, there was no way to get help in except by helicopter. Hover Boards might have made the difference. In fact nearly all rescue personnel could make used of hoverboards if you really think about it.

Chapter VI

Skateboard and Hover Board Power Units

How will the future self-propelled hover boards be powered? Recently the Online Think Tank discussed this topic at length with several engineers, designers, futurists and skateboarders. Many considered this issue and some of the ideas were pretty futuristic, yet potentially feasible. Battery powered hover boards seem to be one common theme. Then there are many ways to charge the battery system.

A gasoline, alcohol, ethanol or diesel powered hoverboard will also work and yet this adds a lot of weight and in doing so the fuel tank or tanks would have to be at the center of gravity to maintain balance as the fuel was used. This can be problematic as this is exactly where we need the thrust mechanisms or hovercraft type blower systems or fans.

As the fuel was used the weight would also change drastically and when it was all used up, well there you are. One engineer reasoned that we could put a forward tank and an aft tank and cross feed them to balance and that would work to solve the weight and balance issues with regards to the issues with out of sync C.G., but still the empty weight and wet weight performance would be a significant difference.

Others on our team were concerned that the present Hover Board gasoline driven designs are simply too cumbersome and does not make sense, although potentially viable for certain applications.



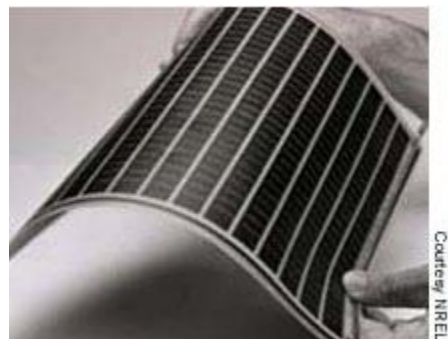
If the hoverboard was used for a rescue situation after an Earthquake, Volcano, Hurricane or Flood, there might not be additional fuel available if it was a reciprocating engine concept. But if the unit was battery powered then a solar powered skin could recharge to go again and be constantly charging while in use as well, certainly not enough to fully power up the hoverboard but enough to cause the batteries to discharge at a much slower rate.

Solar Power

Solar Power makes sense, so what about a Solar Powered Skateboard or hover board? It would be left in the sun to charge and then when ready to ride, turn it on and away you go? Is it possible? Sure say most of the folks on the Think Tank Hover Board Team - stating such things as;

"Yes solar is one good prospect and realize that solar cells due to all the research are twice as powerful today as they were 5 years ago and about 3 times more efficient."

Today there are even solar cells on film wrap which could adorn a skateboard's body. MIT and other top universities have been working on these things and making huge strides in solar cell technology performance.



One high-tech engineer from the Online Think Tank fancies the idea of skateboards run on trash. As the skateboarder drove over trash like wrappers, paper cups and such it would be picked up and then would enter the transformation process fuel system for the hover board or skateboard's propulsion system. Although this sounds far fetched indeed, it is definitely using one's imagination. Thanks Jim, although some Hover Board Think Tank Team Members have now nick-named Jim "***The Garbage Man!***"

Worse one Think Tank Member we will not name proposed - jokingly that Domino's Pizza would buy the hover boards for delivery, put the pizza on the table and then feed the box to the hover board? Now that was imagination that even puts ***Joe's Frozen Hover Board Gallery*** to shame lamented another member.

The funniest part about it is that converting trash into energy is now being done on a large scale and thus judging by Moore's Law by 2075 maybe Hover Craft or Hover Boards might run on trash, who knows?

Magnetic Wheel Power Charging

One Online Think Tank member liked the idea of using a *magnetic wheel power charging unit* to trickle charge "*flat battery packs*" (*ion-lithium cells*) located within the interior of the powered-skateboard or hoverboard. This would be possible since carbon nano-tubes are strong and very thin leaving more room for the battery packs in the interior.

Using friction based wheels another way to develop power would be as the wheels spun they would charge when being pushed and when slowing down, carefully maintaining the proper speed unless the rider stopped, jumped off the board or tapped his foot on the stop button. Of course the skateboard could have multiple technologies charging the batteries including *solar*, *magnetic charging* or even Bump Charging using *electromagnetic induction technologies* that we see in those shake-able flashlights currently sold. Either way the future of skateboards and flying skateboards is bright; isn't it is great time to be alive?

Bump Charging

The bumps on the sidewalks for skateboards are enough to trickle charge the batteries and putting several flexible flaps underneath in the wind-stream or prop-wash of the hover blades can assist in charging batteries on the hover board. These systems can also be used to run *LED lights and LED circuit boards* for the electronics needed using electromagnetic induction technology to charge a capacitor instead of the lights or circuit boards working off a battery.

Currently there are some nifty micro-flashlights being used which you can buy which use a similar technique and are available thanks to the *Everlight Flashlight Technology Research Lab*. These smaller flashlights work by shaking them for about thirty seconds and shine for about 6 minutes and they shine quite bright since they use a very bright LED light.



In the reference section of this research report please see the **Media and Internet Articles # 3** and there is a quick movie you can watch online to see how this technology works.

Chapter VII

Skateboard Parks of the Future



[San Juan Skate Park - Acconci Studio - <http://www.acconci.com>]

The image above demonstrates the passion and imagination that the sport of skateboarding evokes in the minds of those who dare to dream and act on those dreams. This skate park exemplifies a sense of passion in the future in the ultimate of human design. A team consisting of World Class designers; **Vito Acconci, Darío Núñez, Sehzat Oner, Jeremy Linzee, Peter Dorsey, J. Gabriel Lloyd, Sarina Basta** at **Acconci Studios in New York** came up with this skateboarders paradise. Consider if you will the theme;

A Skate Park that Glides the Land and Drops into the Sea

The Acconci Design Team explains **The San Juan Skate Park** concept where dreams are turned into reality;

Drop in from on high; define the site for the skate park by taking the three raised parts of the site: in the middle, the pedestrian ramp over the restaurant – on one side, the shallow hill near the stadium – on the other side, the mound and plateau at the ocean. Connect the dots and make a ‘T’ over the ground: it provides a surface, within the overall park, on which to skate the park. Let the elevated areas form the skate park: the skate park flows down the ramp -- it flows through the hill -- it flows up the mound and off the edge of the plateau, it drops into the sea like a wave.

The skate park starts at the high point of the pedestrian ramp. The grass track, on either side of the walkway, ends here and is replaced by a strip, a track, of green concrete. Like skateboarders, the strips go down so that they can go up: the strips roll down the ramp, they wave up and down as they roll. The strips swell out from the ramp as they roll; like skateboarders, they take all the space they can get.

At the bottom of the ramp, the two strips rise and cross in mid-air, over the pedestrian walkway. The running track around the hill is stretched over, so that it passes under the intersection of flying strips.

All the while, the green concrete has been gradating in color; green turns into blue.

At the intersection, the strip from the left dives down to the ground and swerves off to the right, while the strip from the right dives down and swerves off to the left.

One strip heads toward the hill. The strip breaks, the broken parts shift out of line as they roll up and down toward the hill.

The strip burrows into the hill; the strip curves around itself to make the inside of a hole, a hole in the hill, a spherical hole. It's a sphere that swallows itself, that loops through itself so that it's pushed in and pulled out. The sphere proliferates, it's a sphere-upon-sphere, a sphere-within-sphere. As you skate around a sphere, as you use the sphere as a bowl, you skate into another sphere. Where a sphere inside intersects the outer surface of a hill, it breaks the hill, makes a crevice in the hill; the hill has mouths – you can exit the loop of spheres through a mouth, you can walk up the hill and enter the loop through a mouth.

The other strip heads toward the mound. It loops and rises, one step at a time, up the slope. You skate along a strip, or Ollie from one strip up to another. You grind on the edges of the strips.

(Next to the highest strip, on the plateau, we're proposing an option – an option we'd love to do if there were the money to do it. An ellipse, distorted into the shape of a kidney, is divided into kidney-shaped strips, loops. Each loop is movable; skating at one end lowers the strip at that end, like a seesaw – the ground rises and falls, as skaters use different parts of the ground. The earth moves under your skateboard here; you can't be sure of the ground you'll land on, your skateboard has to manipulate not only a space but also time.)

The skate park is lit at night. The concrete splits and shifts, leaving a crescent of light behind perforated metal. A crack of light can be made wherever it's needed; the sides of sloping ramps, the tops of spheres inside the hill, are cracked for light – up the slope of the mound, the rise of one strip above the other releases light.

Each of the five strips up the slope turns and curves toward the ocean, making a surface like a quarter-pipe, a half-pipe. The one coming from the lowest strip is the shortest and the shallowest; the one coming from the highest strip is the longest and the deepest. You can skate a pipe whatever your experience is, whatever your skill; you leap up to the sky, over the sea.

This is a vision and a glimpse into the Skate Parks of the future and these new trends are well on their way and gaining momentum. Now take these exotic, dreamlike skate parks and add in the future of *holographic imaging, net-centric systems and virtual reality* and you can begin to see just how impressive the Sport of Skateboarding will be.

The Interactive Skate Parks and indoor recreational facilities of the future will be nothing short of spectacular. Imagination has always been the hallmark of new *futuristic concepts*. From Science Fiction usually comes new technologies and we know many of **Arthur C Clarke's** concepts in his books make up much of today's modern satellite technology. Now consider the recent questions posed to the Online Think Tank's Hover Board Group with regard to the future of skateboard parks;

- **How will they work?**
- **What will they look like?**
- **What will the future of skateboard parks be?**

Well, first off we made a rather bold and heavy statement;

"We reject your questions and ask to modify 'skateboard parks' to 'recreational skate and hover board parks' before we start."

It was agreed upon by all participants and thus we set on our way to discuss the future of integrated skateboards and hover boards, as well as their riders in the future parks. First we spoke at length of Interactive Training to improve safety and considered that it will be similar to motorcycle racing schools, with simulation, Virtual Reality and real life experience and that the skateboard or hover board would be in constant contact net-centrally with the Skatepark's IT system.

Next we talked about High Level Contests, video systems and bill-board displays integrated into an **Artificial Intelligent Scoring System** measuring such things as wobble, speed, height and smoothness based on a *mathematical matrix*. We also considered one-on-one competition with the parks system where the competitor was Holographic and that was the Competition to beat. Much akin to the **IBM Big Blue Artificial Intelligent chess matches**, where man is pitted against machine.

"How real will these systems actually be?"

"Oh very real" we said.

And how probable are these scenarios? Well, now that we have invented the idea, pretty probable indeed. In fact hover board and skateboard parks will soon be *Blurring Virtual Reality and Reality*. This too can be duplicated with **Holographic 360 degree 3D Xbox Systems** at home too. How so you ask? Well the rider can take the Skateboard Park Home with them (VR Living Room) and these can be integrated into eLearning systems while Virtual Skateboarding on the carpet or a platform with a skateboard attached in an augmented reality VR combo.

All the skating competitions can take place anywhere in the world even a kid in an Antarctica residence can compete during the middle of an Ice Age. **The Skateboard Olympics** can be right at home in your living room while competing with other Nation's Teams or individuals without Moving. Simultaneous action or competing with recorded events or players.

Imagine something so simple as a living room *Virtual Reality* event bringing us all together in a common cause; **Technology of the Future**. That is what we imagined at the Online Think Tank. Too far-fetched to be real, you might ask? No. This is a possible future and a probable use of the blending of these technologies with future in-home video games and VR systems.

Of course there will be significant changes also on the low-tech side of skateboard parks and Hover Board Parks of the future. For instance they will double as rain-water collection areas, where the water will run off into *simple filtration systems* to be used for cleaning, farming and other important uses.

In fact these concepts are already emerging as *Architects (AIA)*, *Landscape Architects (ASLA)* and *Engineers* consider the issues with challenges in future water supply. Water shortages in urban areas and growing suburbs as populations increase will be over-taxed to the breaking point. The Skateboard and Hover Board Parks offer a chance to collect this rain-water.

Skaters for Public Skateparks (SPS), which is a 501(c)(3) non-profit group that specializes in promoting skateparks in the United States and abroad stated;

"If your city doesn't have a skatepark, then your city is a skatepark."

Their point is that if you do not want skateboarders around town in shopping centers, government properties or in front of businesses then you need a skatepark, because if a city chooses not to address the issue, they have already made a choice. Their group is an advocate for safety and free access to skateparks for all skateboarders;

"Skateboarding is Not a Crime!"

In the future we can expect more traveling skateboard parks perhaps the size of two tennis courts that will be delivered to parking lots of retail centers to promote the video games, hover boards, accessories and high-tech Virtual Reality digital equipment for the living room of the future.

These "**Insta-Skate Parks**" will come on two or three 18-wheelers, fold out, pop-up and be ready within hours for 10s of thousands of spectators and 100s of local hover boarders to compete and watch *Pro-Exhibitions* agreed the Think Tank Hover Team.

Flexible skateboard ramps at skate parks may also one day power up the lights for night skating by generating energy as the skateboarder puts energy into the ramp during his run up it. Low wattage bright lights will then be directed down onto the skatepark and shine bright without taking a huge chunk out of the City's electrical bills.

A flexible skatepark ramp also would have other exhilarating possibilities such as being able to sling shot the rider up off the top of the ramp, as the ramp flexed like a pole vaulter's pole it would mean better height off the ramps. Additionally in doing so the flex would generate power for the lighting system and *activate the digital camera sequence* by estimating the amount of air the rider will get based on the speed and energy converted on the flex ramp. This would have the rider centered in the picture perfect every time.

High Level Contests and AI (Artificial Intelligent) Scoring Systems

The skate parks of the future will be able to utilize artificial intelligent scoring systems allowing the skateboard rider or hover board rider to compete against *holographic competition* side-by-side or score the individual against their handicap from previous performances. The computer judging system can take into consideration the form of the rider, as well as the performance and height that is attained off the ramps. Then using a *decision matrix* the AI (artificial intelligent) Scoring System can determine who is the best skateboard or hover board rider based on technical skills, form, performance and achievement.



[Skateboard Park Completed in China]

This will help the rider improve his or her performance, while competing against others or themselves. And the competitions can be on-going as the computer can keep track of all performances, age groups, skill levels, best scores, etc in the Recreational Skate and Hover Board Park or other parks from across the state, throughout the nation or around the world; each time moving the rider up thru the ranks of top performers.

Since the hover board or skateboard will have active RFID tags and the skateboard park will have optical laser sensors there will be no way to cheat and unlike the problems we see in **Olympic Ice Skating** with the judges; the preferences of the individual judges for a particular rider, rider of a certain area, state or country will be completely eliminated.

Another concept discussed was a take off on a theme from a Snow Boarding and Skiing Indoor Facility in Japan, which has a *perpetual rotating hill* that you can ski down, but it never ends. This would be a relevant concept for down hill trick riding, as the rider would never have to put their feet down for propulsion. Additionally a moving ramp might assist in speeding up the rider similar to walking on an airport moving walkway, walkalator, moving sidewalk, travelator or moveator. This would allow much more speed off the end of the ramp.

One Hover Board Team thinker envisioned a skate park which was magnetized and the boards would be plated underneath with the opposite charge. The rider could bring their own custom board and strap on a plate under it when entering the skate park facility or rent a special board. What would the special board look like? Well, Think Tank Team Member, Joseph, states;

"The skate board would need multiple rollers (marble types) and they must have a spring loaded axle to control the down forces when not in a magnetic field. The board bottom would like caterpillar legs"

The Skate Park itself would be quite costly to build, but once completed it would sure give one a much different ride and provide for some great tricks. The magnetic ramps could also pull the boards up the ramp and increase the speeds. Of course if the rider wanted to abort the run, they would have to jump off quick.

Certain trick areas could be marked which would be a more robust magnetic field and as the skateboarder approached and passed over the mark they would be trust into the air to do their trick or clear a barrier. Magnetic fields could be staggered allowing for virtual ramps as well. Indeed Joseph takes the concept all the way with some additional thoughts;

"...more thoughts on the skate park design, a rider must start on the non magnetic side of the slope which is angled for the greatest possible ground speed attained by gravity, once the board enters the magnetic field and is able to gain the speed for aerodynamics the design of the board become paramount, also if the layout of the track is checkered mag then no mag this might enhance the air ride and the control factor."

Take the Skateboard Park Home (VR Living Room)



[Tony Hawk's Virtual Reality Project]

All the captured recreational skate and hover board park performance sequences will be available by the computer system and thus will be available for home Virtual Reality entertainment systems. Interactive Virtual Reality and Augmented Reality living room video games will have all levels of competition to match the level of the home user; no more worries when weather is bad, everyone can still have fun, compete or just enjoy the sport for what it is; fun, challenging and exhilarating.

All this can be coupled it with *eLearning initiatives* making it fun to learn while riding a skateboard, perhaps choosing answers to questions which depict a certain direction of travel while operating the hover board or skateboard augmented reality platform at home. Stay in shape, have fun and learn too. Why not *Learn physics while skateboarding*, it's all physics anyway.

Skateboarding in the Lunar Colony

On great thing about hover boards is that they can be used in any amount of gravity by changing the settings the less gravity the less atmosphere thickness needed to hover. The Hover Board-Skate Board-Wave Rider could be used in any gravity displacement; Earth, Mars, Moon. In fact the virtual reality rendition of the game could be called "*The Lunar Board*" or some catchy brand name. Skateboarding in the Lunar Colony might well be one of the most fun activities in the solar system?

At first when the Online Think Tank was asked to project skateboarding and skateboard parks in the year 2030, we all laughed, but then we thought, sure. We can see all the rapidly advancing technologies in the present period and it does not take a rocket scientist to see where all this is leading too. It only takes a rocket scientist to get us there. It takes an advanced skateboarder with strength of character to do the rest. Are you up for the challenge of Skateboarding in the Future Lunar Colony? Well, are you?

The Low Gravity Experience

So you think you have done it all on a skateboard, mastered all the tricks and can hold your own at the semi-pro level? Well, guess again, because soon zero-gravity or low gravity skateboarding will be here or there rather, as in 'on the moon' where things ought to really get radical.

Unlimited tricks in low gravity will be able to be performed

In the future the Ultimate Challenge might be skateboarding or hover boarding in a Wind Tunnel **Virtual Reality Skateboarding Simulator**. This will be the Ultimate Challenge and the rider will be *completely immersed in the Low Gravity Experience*. In fact the Online Think Tank has already been asked to look into these futurist concepts, as the time is approaching fast.

Mars Colony Skate Park Master Plan

What will the Mars *Colony Skate Park Master Plan* look like and who will sit on the Recreational Skate and Hover Board Park Planning Committee? What about the future of a Laserium Skate Park - Hovering Amongst the Stars? Well it just so happens with new carbon nano-tube construction the ceiling of the skate park could be see thru or made opaque by simply a change of electrical current. Mars ought to have a great view of the stars with its thin atmosphere and lack of light pollution. Or with new technologies the stars could be projected onto the ceiling like *IMAX Theatres* and that could be done any where even in underground bases on planets where human life on the surface was impossible.

Conclusions and Concept

All this technology already exists NOW and it is only a matter of refinement, cost, weight and size. Remember Moore's law for electronics. We are seeing this now with **UAVs & MAVs** the size of insects. It is all doable only a matter of imagination, will, funding and ROI. Actually, it's all almost here the way we see it. So the question remains and is asked by Dr. Nathalie Fiset;

"My children are wondering what timeframe we are looking at until we see people "hooving around"? Are there prototypes being studied right now? Are there patents waiting for approval?"

The answer to this question is that it will not be long now. Consider if you will that the military has such technologies available and needs to refine them still and then there will be transfer technologies coming forth into industry. As the military completes stable and workable units, you can expect as this happens it will be 5 years after that when the technology is released to commercial endeavors. Then it will be another 5 years until these technologies reach the skateboarding consumer markets thus; **5 + 5 = 10 years** after the military has begun use.

If the military completes their R and D by the end of the year in 2008, then we can see this market open up and be in a full bloom climbing up the product life-cycle curve by 2018. Of course there is another possibility and that is an entrepreneurial team puts a rush on the project to get these technologies to market. This means that in 3-years or less the first workable prototypes will be tested by pro-skateboarders.

Then the military will buy the technologies from the private sector and give it the *"umph"* as is becoming much more common these days, as hypersonic innovation from private sector is often outpacing R and D Roadmaps of the military. When there is financial incentive in the Billion Dollar range in the free-market, monies will be available to make it happen.

Either scenario is possible thus either outcome means the future is coming in low and fast. And so the journey begins; the skateboard of the future will fly, and it will fly like nothing else. Now all that we need to do is build it.

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Writing an eBook About Technology

Easier Said Than Done

By Lance Winslow

As writers we are often assigned projects or come up with a project of our own to do. What might seem simple can quickly escalate into a full on monumental task. For instance take this recent project we decided to embark on; an eBook about a specific sub-sector of Technology. Believe it or not it was an eBook on the Future of Skateboards, or rather hoverboards of the future.

Looking at the project, I said well piece of cake, I use to ride a skateboard as a kid, all day in fact. I can write an eBook in 2-days right off the top of my head and since it is such an easy project, I can edit it and write it, get the pictures, permission to use and even format the darn thing in that time.

Well this little project that I thought could be done in 2 days is now into its first day and I am not even 45% done. This means even if I kick butt, which I have been known to do this is going to be over 4-days in the making. The original idea was proposed by a fellow writer and Futurist author who recently been working on a single chapter of a book on the subject for toy technologies. I proposed really making it into a big project and said;

"If you are NOT going to write that "Skateboard" book let me know. I think the subject is interesting and can do it off the top of my head into Dragon Voice Software. So, I have already begun."

Of course my thinking was that if they were not interested, I would make it an eBook for my website, as content [Online Think Tank website] and that I would probably have it done in a few days.

My thinking was why make it a kids book, then it would be more or less lots of illustrations and pictures rather than a reality based plan to actually build a flying skateboard. An Adult book on the other hand would be a subject that could be relevant for UAVs, NASA SATS Future Flight, military or a lead in to technologies described in a Sci Fi book chapter of the future.

Needless to say the project looks like it will be nearly 50 pages, including technical data and lots of research and could easily take 5-6 days full tilt. So, remember to not underestimate your commitment to a writing and research project, especially a book or shorter eBook version. I suppose this is really a writing tip of the day for me to recite to my mirror? Think about it.

Customer Service for Skateboard Parks

By Lance Winslow

How do you please a group of teenagers at a Skateboard Park? Perhaps you need to consider a little extra customer service. Now then obviously kids on skateboards have a chip on their shoulder and attempting to threaten them that you are going to throw them out of the park will not work, after all they have probably been thrown out of every shopping center in town, more than once.

As a kid, on a skateboard once got chased by a Hughes 500 Helicopter when I tried to escape selective prosecution, after ditching a security guard and a black and white, which came to his aid? Imagine if I would have been caught; \$500 per hour Jet A fuel bill my parents would have received? I would have had privileges terminated for months and been grounded.

Needless to say customer service at a skateboard park starts with true customer service and not threats. When dealing with skateboarders at skateboard parks you must understand that they wish to be treated like adults. It is therefore necessary to talk to them as such and explain to them your predicament and need for safety and their responsibility to follow the rules.

Meanwhile, customer service is understanding their needs and taking their questions and comments seriously. I can tell you after working with the local parks and recreation Department in our city. That once a customer service program was implemented; not only did the skateboarders enjoy the park more, but we had great reviews from their parents. Please consider all this in 2006.

Skateboarding Park Initiatives For Your City

By Lance Winslow



If you are a skateboarding fiend and you want to know how to get a skateboard park in your city; then listen up. First you have to overcome the status quo and all those old folks in city council and convince the city attorney that the new proposed skate part will not cause excess liability or lawsuits for the city. Easier said than done, I know.

Nevertheless, it is imperative that you give the city a run for their money and get public support on your side. For instance you need the support of property owners of shopping centers and tell them that if there is a skate park then the kids will not skate in front of the centers. Next you need to gather signatures of at least 1500 kids who ride skateboards who will promise to use the facility rather than illegal skateboarding.

Okay, now comes the fun part. You must go an visit other skate parks with you and your buddies to try them out and check out what types of features you want to have integrated into your design. Then you need to find a designer that will help you, an architect. Then you need to make a proposal and a plan and then once you have that in hand go get on the City Council Agenda and state your case. Make sure the Park and Recreation Superintendant gets an advanced copy, set up a meeting there first.

You can do this. I certainly hope this article is of interest and that is has propelled thought. The goal is simple; to help you in your quest to be the best in 2007. I thank you for reading my many articles on diverse subjects, which interest you

Direct Mail Marketing to get a New Skateboard Park in Town

By Lance Winslow

Business retailers and the public are often against skateboard parks and yet a skateboard park will mean less skateboarders breaking the law and causing problems in shopping centers. It also means less cost and security guards to chase them away. It will also alleviate the cost of police who are often called because of the skateboarders.

Skateboard parks makes sense but it is hard to gain public support and therefore one of the best things skateboard park planners need to do is to send out direct-mail marketing campaigns to the local citizenry and public to explain the new skateboard park proposal.

Additionally, the skateboarders themselves and their parents may volunteer their time to help get an initiative on the ballot, lobby local politicians or even show up at City Hall for the planning commission meeting. With public support a new skateboard park in town is possible and feasible and it will eliminate many problems.

This is why I recommend direct-mail marketing advertising in those little coupon book packages that are sent out to people in various zip codes. If the public within a 15 mile radius gets these little cards explaining the skateboard park, then you will watch your support for the project grow and then your town can finally have a skateboard park.