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Presents

# GARBAGE WARRIOR

A Film by OLIVER HODGE

(86 mins, UK, 2007)

Distribution

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MEDIA

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## Introduction

Imagine a home that heats itself, that provides its own water, that grows its own food. Imagine that it needs no expensive technology, that it recycles its own waste, that it has its own power source. And now imagine that it can be built anywhere, by anyone, out of the things society throws away.

*"If you create your own electricity, heating and water systems you create your own politics. Maybe that's what they're afraid of." Michael Reynolds*

Thirty years ago, architect Michael Reynolds imagined just such a home – then set out to build it. A visionary in the classic American mode, Reynolds has been fighting ever since to bring his concept to the public. He believes that in an age of ecological instability and impending natural disaster, his buildings can – and will – change the way we live.

*"If you want permission to do something different, you first have to prove that it works. To do that you have to break the law. It's a Catch-22 situation." Michael Reynolds*

Shot over three years in the USA, India and Mexico, *Garbage Warrior* is a feature-length documentary film telling the epic story of maverick architect Michael Reynolds, his crew of renegade house builders from New Mexico, and their fight to introduce radically different ways of living. A snapshot of contemporary geo-politics and an inspirational tale of triumph over bureaucracy, *Garbage Warrior* is above all an intimate portrait of an extraordinary individual and his dream of changing the world.

*"Tsunami warning systems are put in after tsunamis, security is tightened after terrorist attacks, and we'll deal with global warming after it happens" Michael Reynolds*

## **Narrative Outline**

Mike Reynolds has been challenging the status quo with his experimental approach to building ever since he graduated from Architecture School in 1968. One of his earliest efforts – a house made from beer can bricks – so upset the national bricklayers' union that it forced him to halt construction. Undaunted, Mike went on to develop the concept of the 'Earthship': an off-the-grid solar-powered home built from used car-tyres, which recycles rainwater and sewage and costs next to nothing to run.

Reynolds moved to a patch of desert on the outskirts of Taos, New Mexico, where he began to experiment with a new, scientific approach to architecture. Lax planning laws and sympathetic public officials willing to grant him exemptions from state building regulations meant that Mike was able to use beer cans and other unconventional materials to construct a series of jaw-droppingly original homes. Some were shaped like castles and pyramids; many were powered by giant wind-turbines. Some were disasters, others spectacular successes. But with each project Mike tried, he learned something new.

Over the next twenty-five years he and his crew created an energy-independent community – a test site for autonomous living. Soon they were building for clients all over the globe with clients including actor Dennis Weaver, who commissioned his own million-dollar version high in the Colorado Mountains.

Just when success seemed assured, the community back in Taos ran into trouble. Big trouble. A changing of the guard at the local planning authority had brought a less sympathetic regime into power. Planning and building regulations stated that housing had to be connected to centralised utilities – and Reynolds was breaking every rule in the book. The law came down hard: shutting down his communities and confiscating his architect and contractor's licences.

Reynolds had always believed very strongly that people shouldn't have to rely on outside forces for the provision of safe, comfortable shelter, and now he began to realise that housing regulations stood in the way of something he'd always regarded as a fundamental human right. Time after time he was coming up against planning bodies that not only seemed to deny people the right to create their own homes, but were forcing future generations to inherit housing designed around increasingly unreliable services. With today's changing global environment, what was the point of forcing future generations into a lifestyle of dependency on dwindling supplies of water, gas and oil?

These were big questions, too big to be answered by architecture alone. Reynolds saw that if he wanted his buildings to have a future – and open up the possibilities of the profound social changes they could facilitate – he was going to have to scrub the construction dirt from under his fingernails, put on a suit, and rewrite the law. And New Mexico was as good a place to start as

any. This, after all, was the state in which scientists blew away every code and convention in existence when they tested the atom bomb.

Could Mike achieve a similarly revolutionary breakthrough in planning?

Determined to do just this, Reynolds decides to tackle the politicians head on, by drafting a “sustainable building test site” law and lobbying for it at the state legislature. After months of effort the bill is put to the vote, but in a dramatic last minute showdown it is filibustered off the senate floor.

Hugely frustrated, Mike temporarily abandons America and flies his crew to the Andaman and Nicobar Islands, devastated by the Asian tsunami only a few weeks before. Here, in an area where all infrastructures are shattered, all wells are polluted with sea water and thousands are living without shelter, bureaucratic niceties are irrelevant and Reynolds’s ideas for sustainable buildings are eagerly welcomed.

In the three weeks left before the monsoon, Mike and his crew show the survivors how to use tyres, plastic bottles and bamboo to build a house that provides its own drinking water, sanitation and air-conditioning. When the project succeeds they are hailed as heroes – and granted immediate approval by the Indian authorities.

It’s a great boost for Reynolds, but it seems a long way from the situation back home. At least until hurricane Katrina hits New Orleans. When even sceptical scientists blame the disaster on global warming, Mike seizes the opportunity for a second attempt to alter the law. Downing tools he digs out his tie and heads back to the corridors of power.

Second time around he is wiser, calmer and more prepared. And Katrina has meant that there’s no need to preach. The advantages of Earthships are now self-evident, and thanks to his earlier efforts Mike now has a core group of sympathisers within the bureaucratic machine. He’s even beginning to relish his new role, as comfortable now in a suit as he is in his Carhartts [workwear]. As a consequence he can play the game better. Can he play it well enough to succeed?

But with yet another hurricane pummelling Northern Mexico and Texas, leaving tens of thousands homeless, the architect finds himself stuck trying to wake a (literally) sleeping state senate, his blood pressure rising as vested interests line up against him and hardened legislators insist that it takes at least five years to get a major law passed. Convinced more than ever that climate disaster is only decades away, Reynolds starts to doubt whether he’s made the right choice by swapping his hammers and drills for the reins of what seems to him to be a prehistorically slow legal process. Can he get the dinosaur to turn round in time? Or will it carry on its way regardless, so crushing his version of the American Dream?

The scene is set for a high tension climax, which *Garbage Warrior* follows all the way to the end...

Director Oliver Hodge has followed Mike and his crew from their techno-Hobbit homes in the desert, to their camp in the tsunami disaster zone, to the floor of the New Mexico senate. Thanks to this privileged access, he's been able to gain a unique insight into the life and motivation of a modern American maverick whose time has finally come.

### **Science and Design History**

Michael Reynolds didn't come up with the Earthship concept overnight. It took him thirty years of experimentation to work out how to design buildings capable of self-sufficiency in power, water and sewage. The film tracks this development, and shows how his scientific approach resulted in the extraordinarily successful housing solution that we see today.

Reynolds was originally inspired to seek alternatives to traditional architectural methods when he was at college. Growing piles of consumer garbage in his home town of Cincinnati and a national crisis in supplies of lumber convinced him early on that he should devote his career to finding new ways of building houses.

He began by using beer cans. Cheap, light, strong and plentiful, they proved to be an excellent construction material – so much so that Reynolds actually patented a design for a beer can brick in the 1970s. But it was with some crates of beer he'd bought for drinking (as opposed to building), that Reynolds made his first big discovery. He'd moved the crates inside from where they'd been stacked in the sunlight, and had then gone away for the weekend. On his return, he noticed that the heat trapped in the beer had kept his house warm in his absence. It was a "eureka" moment.

Many great breakthroughs happen as a result of lucky accident, and this was just such an occasion. Reynolds had stumbled across the phenomenon of thermal mass. The next step was obvious: what if he filled his beer can bricks with water, and built a house of those? Would the bricks absorb heat from the sun by day and release it into the building by night?

Reynolds experimented by building a range of extraordinary buildings. Some looked like mini-castles, their turrets glinting in the desert dawn. Others were pyramidal or circular in shape. The answer that came from all of them was yes, the theory of thermal mass worked, although beer cans proved not to be the perfect water containers: they had a habit of springing leaks after a couple of years and soaking the house's occupants while they were watching TV.

Still, the concept of a passive solar building had by then been proven. Reynolds replaced his beer cans with a more practical but equally cheap and available material – car tyres rammed with soil – and started using them for the back walls of glass-fronted south-facing buildings.

Some early designs worked rather too well, with enough heat coming in through the front window to fry an egg or melt a candle, so Reynolds developed ventilation systems that helped maintain a steady and comfortable temperature all year round. This was possible because the huge mass of car tyres absorbed enough heat during the summer months to keep the house warm throughout the winter.

Other innovations were just as important. Reynolds designed the houses to harvest and store snow and rain in tanks large enough to hold thousands of gallons. This water storage was integrated with a series of biological systems – indoor and outdoor “wetland” gardens and anaerobic bacterial treatment vats – to provide clean water for washing and cooking, “grey water” for toilet-flushing, and “black water” sewage treatment.

Solar panels and wind-turbines were added to provide electricity and hot water, and Reynolds designed a special “power organising module” to allow for power storage in racks of “golf-cart” style batteries. The combination of all of these systems meant that a completed Earthship is not only self-sufficient in terms of heat, light, water, electricity and waste management, but thanks to plants grown in the wetland environment it even provides its own food!

The occupants of the latest Earthships in New Mexico pay less than US\$40 a year in total utility costs and live comfortably on the water harvested from an annual rainfall of less than 8 inches per annum. They also live in homes whose unconventional materials have opened up whole new possibilities for housing design, not just ecologically, but aesthetically too.

And yet planning and building regulations in many Western nations ensure that it is actually illegal to build these buildings. Drawn up in an era when it was important to improve the housing stock by ensuring that all dwellings were connected to the service grid, these laws are now standing in the way of advances in sustainable development like Reynolds'. His own community in Taos was shut down as a result of these regulations, and his licence to practice as an architect was also revoked.

*Garbage Warrior* follows Mike on his mission to get the authorities to permit designated building test sites, an arena in which designers can take risks and make mistakes and where radical and ecological styles of architecture can be developed outside the restrictions of the law. It's a journey that will take him from the state legislator in New Mexico to two disaster zones, as he fights for our right to evolve housing at the speed needed for the radical social changes we're going to require if we're to survive impending ecological catastrophe. Mutations in evolution have sometimes saved a species from extinction; Mike Reynolds believes that mutations in architecture could perform the same service for the human race.

## **Production Story, by Oliver Hodge**

Over the last few years I have stayed in many Earthship houses in New Mexico. At 9.000 ft above sea level the temperatures can drop as low as 20 degrees below zero at night, yet in some of the more modern houses it was 70 degrees in the room where I slept. One morning, as I flicked on the wall-mounted flat screen TV, while cooking my breakfast in the luxurious stone floored adobe kitchen diner, the epic dimensions of this story became apparent: I'm not connected to any utilities here, this is 'off grid' and it works! I'm living in harmony with nature; in fact it is beautiful and luxurious. Yet the guys who built it all were shut down for nearly seven years - serious battles have had to be fought for this potentially life-saving solution. This was a story of a heroic battle with an archaic rule system, a fight with the bureaucracy of a nanny state that smothers innovation to the point where oil dependency is the only survival allowed.

What maverick eco-architect Mike Reynolds started 35 years ago was way ahead of its time, yet like so many other visionaries he was beaten down, rapped for his mistakes rather than his acknowledged for his findings. He was embroiled in a battle to save the planet from what we now know is its almost certain fate - environmental meltdown.

We always wanted to make a movie that entertained and offered high production values. But how could we capture this in an epic feature film style with strong characters and observational footage on a localized level, telling the big story (global catastrophe, climate change and all that), without doing the dreaded talking heads type of documentary? We needed the real life drama of the struggle with the retrospective back story to tie it all in: for me this was the real challenge. Never having made a film of any kind before, struggling with just using a camera and recording sound was hard enough, but doing this while thinking of the story all the time, trying to look ahead and judge when and when not to shoot ... Well 3 years and 350 hours of footage later, with much advice taken from my producer and editor, and anyone else that had experience that could lend a bit of advice, we got to the edit.

Editing that much footage into a working narrative structure involved some brutal decisions, scrapping the entire British story, as well as many other aspects. The process even involved our editor, Phil Reynolds, taking a scheduled break during the edit, while I flew back out to New Mexico to film Mike's remarks while he watched a rough cut of the edit so far. These retrospective comments were then cut back into the film. This technique was a challenge but Phil's expertise and creativity won through. It proved an invaluable narrative tool, and avoided the dreaded scripted voice-over, which would have killed the passion of our main character.

Because of the recent findings on climate change, it seems that there has never been a more urgent time for this film to reach a worldwide audience. There is no escaping global warming; it's going to affect everyone. I've always strongly believed that it is a basic human right to be able to build a sustainable home on a piece of land. There are people from every country who relate to

this concept, and who will be inspired by the film's characters' attempts to make this their reality.

Although *An Inconvenient Truth* is an important landmark film the world badly needed, it only makes us aware of the issues. Bar advising us to change our light bulbs, it does not really provide any radical solutions. We wanted to make Garbage Warrior an advance on this film and others, such as *A Crude Awakening*. We wanted to encourage people to act, not just tell them what not to do, or what they are doing wrong. We wanted to offer them real solutions on a local human scale so they can be inspired to change their behaviour, and to feel on an individual level that they are capable of changing the world.

### **The inspiration behind GARBAGE WARRIOR**

After leaving school I trained as a product designer at Central St Martins School Of Art in London. For the next 12 years I worked in the feature film industry as a prop and model designer, and then moved on to head the department. This involved much creative work designing, drafting and building one-off props and model sets for films such as *Star Wars*, *James Bond*, *Tombraider*, and *Judge Dredd*. As head of department, I drafted in crews of up to 50 skilled artists and makers to satisfy the ongoing demands of directors such as Tim Burton and George Lucas. For me the glamour of working on such movies was always countered with the impossible task of being able to safely dispose of the films' toxic waste after wrap, or an unsettling guilt from chartering huge cargo planes to deliver hundreds of tonnes of sets and props to locations such as the middle of the Tunisian desert. I became increasingly aware of the negative impact that the high budget feature film industry had on the environment, and I wanted to find an area of film-making that was ultimately more productive.

My concerns for the environment had been triggered during my first years in London back in 1990, during my second year at college, after reading a ten-page article in the Independent magazine which highlighted burgeoning man-made environmental crisis around the globe.

I was then inspired to write my college thesis on people's changing states of consciousness before and during the industrial revolution, which I believed to be the root cause of our current environmental problems. During this time I was inspired by Fritjof Capra's book 'The Turning Point', and Carl Jung's study of Alchemy. It was a time of for self-examination and questioning of my own true goals and ambitions.

### **Meeting Mike**

I met Mike Reynolds in May 2003, when he and his crew arrived in the UK on a two-week visit to build a prototype Earthship house in my home town, Brighton. I was inspired by Mike's apocalyptic view of the future, and by the urgent means by which he and his crew were preparing for it. Every bottle or tire is an invaluable building material and when the cities fail and crumble its fair game to go in and mine out the goods. He is one of few people I have met



who has a realistic outlook on the true destiny of our modern civilization: a man who clearly sees that fast radical social change is our only way out of a serious meltdown.

Mike's philosophies are derived from nature and its direct connection with the inner self, brought to a reality in his 35 years of work with the use of simple physics and biology. It is a reality where action speaks louder than lip service, and Mike is both an architect and an activist in the trenches on the front line with the workers. I was inspired; there was no turning back.

### **Budget-free film-making**

I started filming the UK build with the aim it would be a one-off 40 minute television piece, but I was soon to realize that Mike and his desert communities had an epic story to tell. In November 2003 I took a small crew to New Mexico with a couple of thousand pounds of my own savings. During this shoot the cameraman, Ben Cole, taught me how to use my camera, then the money ran out and I was on my own. At this time I had no idea how the story would pan out, or that it would take 3 years to shoot.

Once I had analyzed the footage from the first shoot, it was clear that the story was a political one that was not over; in fact I'd arrived in the middle of it. The communities were still partially shut down and Mike still had unfinished business with the authorities. I let Mike know how I wanted to shoot from there on, observing events as they happen. He was up for it and said he'd give me a call when things were about to kick off. I knew then I was in for the long haul, and that somewhere the story would shift from a retrospective to a present day observational drama.

At this point I could never have imagined the Asian tsunami and Hurricane Katrina happening, but before I could even think of uttering the words "That's a wrap", something on a biblical scale happened, and I knew my shooting wasn't over. These kinds of global environmental disasters are bound to be relevant, man-made or not, they couldn't be ignored and they were bound to find their way into Mike's story.

In August 2005 I was put in touch with producer Rachel Wexler by Jo Nolan at Screen South, who were helping to support the film. Rachel had the skills and experience I was lacking to find funding and broader interest. A year later we had approvals from 5 international broadcasters, raising enough money to complete editing and post production.

Despite having a self funded tiny budget (living in old Earthships and borrowing pick up trucks where possible), I still felt it crucial to get that feature film look. I commissioned a local ex-'Nam pilot to take me up for low budget style air shots: hanging out the door of a chopper with a pd150 - no mounts - shoot from the hip and get what you can. Other techniques I used were learnt while working with first and second units on feature films; driving trucks over the camera at high speed, using vehicle mounts, shooting while in the sea, and the odd jib shot thrown in - it all adds to the drama, and takes the visual

perspective beyond your average documentary.

We always wanted the film to have a wide range of music. A combo of hick style banjo and slide guitar for the back story; desert style fusion of pulp fiction guitar and big Morricone sounds for the court room drama; and *Apocalypse Now* Doors-style guitar with Indian tunes for the Tsunami. Composer Patrick Wilson had to rise to the challenge of composing almost the entire music for the film, taking nearly five months of intensive work, such a crucial part in taking this documentary to a cinematic level.

### **OLIVER HODGE, Director**

Oliver Hodge studied Industrial design at the prestigious Central St Martins School of Art in London and from there moved into design for the film industry. He has worked on twenty major feature films heading props departments and supervising special effects projects. This has involved him working intimately with the films' directors, including George Lucas, Tim Burton, Danny Cannon, Danny Boyle, Tim Burton, and Simon West.

Feature films have been a good education in all aspects of film making and Oliver has brought his considerable skills and experience to bear during the last six years. He has shot documentaries and other commercial projects working both with production crews and entirely alone.

His movie credits include:

*Charlie and the Chocolate Factory*  
*Troy*  
*Tomb Raider 1 & 2*  
*James Bond - Die Another Day*  
*High Binders - Jackie Chan*  
*102 Dalmatians*  
*The Little Vampire*  
*Sleepy Hollow*  
*Janice Beard*  
*Virtual Sexuality*  
*Alien Love Triangle*  
*Star Wars - The Phantom Menace*  
*Lost in Space*  
*Mortal Kombat*  
*20,000 Leagues Under The Sea*  
*The Fifth Element*

## **The Characters**

### **The Builders**

#### **Michael Reynolds**

*Architect and developer, founder and director of Earthship Biotecture*

#### **Phil & Ted**

*Architectural graduates, pioneering members of the Taos Earthship Community*

Phil is Mike's foreman, and joined the community with his family in the mid-1980s. He and Ted were among the first to buy into Mike's dream and build their own houses. Since then they've run Mike's build crew and have overseen some of the big Earthship commissions.

#### **Damian & Seth**

*Core build-crew*

Damian and his twin brother Seth came to visit the Earthship community on holiday in the early 90s and never left. They adopted Mike as a father figure and live in two of his early creations: a pyramid wind-turbine and a castle made from beer cans. Damian also worked on the tsunami house.

### **Andaman & Nicobar Islands**

#### **Nileshe**

*Architect, and head of Andaman build team*

Nileshe was the first to realise that Mike's ideas might form the basis of a solution for housing in the wake of the Asian tsunami, after discovering the Earthship site on the internet. He invited Reynolds and his team to come and construct a demonstration building.

#### **Kan**

*Tsunami survivor and Earthship Evangelist*

A successful building contractor who lost everything – friends, house, car, business – in the tsunami, Kan had all but given up on life. The Earthship project helps him find the strength to start again. When Reynolds leaves, he and Nileshe start a company called Humane Technology to promote Earthships in the area.

### **New Mexico Authorities**

#### **Dave Diccico**

*Head Planner for Taos County*

Mike's nemesis, Diccico is responsible for maintaining local planning standards. He's been concerned about the side effects of Reynolds's "right to experiment" for over a decade.

**Shauna Malloy**

*State Attorney for the New Mexico Board of Architects*

Responsible for upholding state building and architectural standards. In 1994 she stripped Reynolds of his architects and contractors licences, but later switched sides and acted as his attorney on another case having gained sympathy for his cause.

**Zee**

*Lawyer & Bill Analyst for New Mexico State Legislature*

Zee helps Reynolds draft his “sustainable test sites” bill and ends up personally lobbying for it in the Senate. An extremely capable woman with crucial contacts, she becomes a powerful ally in Reynolds’s legal campaign.

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AN OLIVER HODGE FILM

GARBAGE WARRIOR

(END CREDITS)

The carbon produced during the making of  
this film has been compensated for with  
rainforest restoration projects by C level UK

80% of the trucks featured in this film were  
Powered with used cooking oil

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'Protest Drum' track  
Courtesy of Will Parnell Music

'Go On' End title track by Brent Berry  
Courtesy of Brent Berry Music

DJ K Tao Radio  
Padi Mac

Legal  
Melorie Chilton

Peter Smith

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Caz Sessions Hodge

Vocalist  
Liz Fletcher

Rostrum Camera  
Ken Morse

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