



*The Natural Additive*

The Muddy Micromanuals are an invitation to the world of building with earth by four of the most ancient techniques known to (wo)man!



This is part 1/5 of the  
Muddy Micromanuals!  
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An Aman Setu Publication.  
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## A Foreword..

Mystical, Magnificent, Mighty, Marvelous! Earth is everywhere on this Earth. We are sustained by earth, we are sustained by the soil. We eat food that's grown in the soil, we can walk on the earth and we can also build our houses out of the earth. This house that I'm living in, is made out of earth. And this earth because it's what we call 'kuchha', can be returned to the Earth when I'm through living in it, or if there's a natural disaster. But a 'pucca' building is a dead building. The soil, the concrete that is made into baked bricks can never again return to the agricultural cycle. It's never again a part of life. Sourabh's books introduce you to ways to make the earth into mud, and to build with mud and to sustain life on the Earth in a much more practical manner.

-Didi Contractor

Sidhbari, 2011

There are innumerable ways of building with the earth beneath your feet. People from all over the world have muddied their hands and smiling faces to evolve this practice into a culture that has diversity at its core. There never was, and never will be a 'right' way of building (Corollary: there's no 'wrong' way of doing it!). The four techniques that we shall look at (alphabetically as follows: Adobe, Cob, Rammed Earth and Wattle & Daub) are just points in time and muddy space. Feel free to move these points wherever and to explore and customise every variable and every aspect of it. Create your own techniques! That's how it has been for centuries! There are no 'experts' in earth construction, simply children who've been playing long enough in the muck...

Please remember that hereafter when we refer to earth construction, we are talking of building with RAW earth. Earth that has not been contaminated by the addition of synthetic substances, toxins, chemicals or industrial products. Earth that is plain old, good old, simple and all-loving earth. We are talking of mixing earth and water with the addition of organic materials such as straw, husk or dung if and when necessary.

So we aren't tampering with the spirit of the material that we're working with but gently shaping it into shelter. It still holds within itself all the earthy wisdom inculcated over millennia. So when the time comes, it can go back to the ground exactly as it was when we borrowed it.

So if you haven't noticed it yet, the most beautiful part of this practice is that it is reversible! Doesn't that take off all the pressure? Feel free to explore and make mistakes (if there is such a thing), we can always take a step backwards when we feel like it. It is never ever too late with mud! Mud is a state of mind (people mistake it to be some mucky stuff that's lying about). It is to acknowledge that we do not know much, and our actions are based on our current knowledge which always is in a state of flux. We learn, unlearn and adapt as long as we live. So the spaces that we live and grow in should allow for growth and grow with us! How peaceful is it to be in a space that one is in synergy with. How violent is it otherwise..

But in the 'modern' world everything's expected to be 'concrete'! Your ideas, your beliefs, and can your house be far behind? Can we afford to be so adamant as to build spaces that are finite and immobile? Where's the space to admit that we were mistaken and need to retrace our steps? Earth gently reminds us to not take ourselves too seriously (whenever there's a frown on any brow, smack a mud pie on it). Hence it is such an overwhelming experience to build with mud, for it encourages us to be ourselves at all times.

Mud buildings are thus some of the most simple and welcoming creatures (and so are the ones that inhabit the same!) and it feels relaxing to simply be with them..

Please also remember that we are talking of raw earth minus the topsoil. So the uppermost few inches of soil containing all the lovely microorganisms and organic matter is **NOT** to be used for construction. This layer is meant for the plants and for growing food for all ( not for building structures meant to house seminars on 'The Impending Food Crisis'). Considering that we cannot create topsoil ourselves at any appreciable rate, always remove the topsoil and pile it carefully (to be used after the construction is over) or spread it in your gardens and fields. In other words, we can use the topsoil only indirectly for construction. That is to say that we can grow food, eat it, get healthy & energetic and then build earthen structures!

# The FA(TRA)Q Section:

Frequently Asked (Though Rarely Answered) Questions

Q) So how strong is this mud structure (pat pat)?

A) Earthen structures though certainly not infallible, are much stronger than we would like to believe. Believe it or not, Mud is also a kind of concrete! When several grades of inert aggregates are held together by a binding material, it is referred to as a concrete. Earth Concrete is bound together by the clay particles present in the earth. The ubiquitous Portland cement concrete (the stuff that 'modern' dreams are made of) is just another type of concrete and not concrete itself.

Q) (Hmm,.. scratch scratch) So how long do you suppose this building will last?

A) Well, the oldest structure still standing on the face of this planet is an earthen structure, a few thousand years old.

Incidentally, the oldest cement concrete building still standing would be just over a century old! So one could be a bit skeptical about these newfangled cement buildings instead! Will they last? Hmm? Without trying to undermine cement (which is an excellent material that needs to be used wisely) one simply wishes to question our beliefs. For if not thought out, processes turn into rituals, and our faith goes blind! So there's absolutely nothing to worry about! Building with earth is a time tested strategy!

Q) But what if it rains (aha!)? What happens then?

A) Nothing much! You've probably heard it several times before, but a good hat (the roof) and a good pair of shoes (the foundation) will keep a mud house healthy, wealthy and wise! We tend to think that mud structures turn into puddles when rained on, which if true would have been awesome to jump in, but sadly isn't. One simply has to be careful that the roof prevents the rain from lashing on the walls (which would otherwise cause surface erosion) and that the subsurface water doesn't creep up the walls (an impervious layer above the foundation suffices). That's it!

Q) What about multiple storeys? Can I build taller?

A) Firstly, even before building anything, one should ask oneself, "is it really really necessary?" If the answer still remains an affirmative, by all means go ahead. Yes, one can build several storeys in earth. One can easily build two or even three storeys in earth without much extra effort. One would simply have to make sure that the walls are strong enough to take such a load (which basically means that the wall thickness may have to be increased if loads are high).

Ancient civilisations have built eight and nine storeyed structures entirely with raw earth! That is definitely something eh!

Q) And the cost? This mud stuff must be cheaper right?

A) In most cases, yes. Mud buildings will be cheaper than neo-conventional buildings. But how cheap would be case specific. At any rate we need to move beyond medieval money based calculations. We must get real and universal, and talk about energy! How much energy are we spending on our buildings is a critical question. Financial calculations will fluctuate with location, subsidies, currency and a host of other factors. But energy will remain constant all over the planet. A megajoule here will be a megajoule there. A rupee here is not exactly a dollar there, is it? So let's talk of the building cost in Megajoules per square foot instead!

An interesting aspect that bears mention here is regarding the distribution of finances i.e. the cash flow. Since we are building with local materials, local wisdom and local (wo)manpower, all the cash gets distributed locally in a decentralised manner. This is very unlike centralised processes based on industrially manufactured goods where all the money is siphoned away from the local economy. The pattern of this local distribution is also fascinating: About two thirds of the money is spent on the labour while the remaining one third goes into materials (this reality gets reversed in centralised processes which are materially biased)! Hence we are investing in people, a wonderful, renewable resource!

Q) And can I build with earth myself? I have no previous experience with construction.

A) People from all around the world have been building for themselves without any engineering or architectural degree for centuries! It's only in the recent past that these specialised professions have come into being (and coincidentally enough, so have the troubles!) and we've surrendered this responsibility. It's the same way in which we believe that doctors are responsible for our health and schoolteachers for our education. We need to reclaim our lives! Of course you can build your own mud house! Millions have done it and are doing it even as we speak! It's just a matter of trying it out and is a life changing experience to say the least..

Please feel free to  
send your Q's which  
T. F. A. are R. Ans.



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