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Abstract:

Our understanding of design has been evolving steadily over the past 100 years and in recent years there has been a rush of new research into a variety of dimensions and Ethics is one the many dimensions that have received research attention. In this paper we look at the various dimensions of design and at current and past definitions to see the contemporary understanding of the subject as we see it today with the aid of models that the author has evolved over several years of reflection and research. We then trace the evolution of design as a natural human activity and restate this history in terms of the major stages of evolution from its origins in the use of fire and tools through the development of mobility, agriculture, symbolic expression, crafts production and on to industrial production and beyond to the information and knowledge products of the day. This sets the stage to ponder about the future of the activity and of the discipline as we see it today.

With the use of a model the expanding vortex of design value and action is discussed with reference to the role of ethics and value orientation at each of the unfolding stages through which we have come to understand and use design over the years. Beginning with the material values of quality and appropriateness we explore the unfolding dimensions of craftsmanship, function, technique, science, economy and aesthetics that has held the attention of design philosophers and artists over the post renaissance period. In the last fifty years our attention has shifted through the work of several design thought leaders to aspects of impact of design on society, communication and semiotics, environment and even on politics and culture with some discussion on each of the major contributors in this ongoing discourse. The further developments that lead to systems thinking and on to the spiritual levels are introduced to place the ethical debate at the centre of the design discourse at each of these levels of engagement.

Some critical case examples are introduced to exemplify the arguments that have been made to establish the various levels of ethical actions that design has discovered and with these the author will argue that design is evolving to a more complex form that will require new kind of integrated design education that is already being experimented with across the world in the face of a series of crisis that we have been facing in industrial, economical, social, and most visibly at the political and ecological levels. These ethical lessons are still diffuse and disconnected in the fabric of design action across the world and we will need to find ways of bringing these to the hand, head and heart of design education if we are to find a new value for design that will help us address the deep crisis that we are facing today.

The full paper addresses the following six questions by expanding on each as we go forward with the discussions that each question entails.

- 1. What is Design today?**
- 2. How did Design evolve from being a core human activity to become a modern discipline with a significant future?**
- 3. What are the unfolding dimensions and orders of Design that we can call the “Ethical Vortex of Design”?**
- 4. Who are the thought leaders who have anticipated these expanding dimensions of Design particularly from an ethical perspective?**
- 5. Are there some critical cases in this broader field of Design that could provide clues for our journey forward at each of these ethical nodes towards an “Integrated Design of the Future”?**
- 6. How do we move towards a new Design education that can “Create the Unknowable – the future for all of us”, in an ethical manner and still be in tune with the needs of our times?**

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Full text of paper follows

Hand-Head-Heart: Ethics in Design

Head - Head - Heart
Ethics in Design

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Hand - Head - Heart

Ethics in Design

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1. What is Design today?

Let us start with our new definition of design since the word has acquired so many meanings over the years. I have used the metaphor of fire to define design using a model that was developed with my students. When we look at fire we see that it has various components — Fire (*Agni*) is a process of transformation—a material is transformed by organic exchanges with the environment and an effect is the product of this exchange. The process is always situated in a particular context and this context is represented by the ground on which stands the fire, both time and place taken together form the context. The process of burning and the products of light, heat and smoke are all in close interplay with the environment and design too is an activity that can happen only with reference to its own context. This fire therefore represents the kind of complex transaction that I consider an adequate expression for the systems metaphor for design.

This means that we see design as a complex activity. There is not a single product that we can call a simple product. Take for example the simplest of products that you can think of and explore its possible effects. If you look at it only as a product of technology, that is, as some material transformed into a functional shape, then it would seem to be simple. However if you consider its entire life-cycle and its impact on society, it is quite another matter altogether. So it is becoming increasingly evident that design has to look beyond the object itself as a mere artifact, as produced by technology, to the effects that these objects have on a complex set of user-related parameters and finally the effects of these objects on the environment and culture at various stages of their life cycle need to be taken into consideration while we design them.

This leads us to re-evaluate the role of design and to anticipate the shape of the design activity in the years to come. We are beginning to understand the complex nature of design, which means that you also need a fairly complex method of dealing with it. Design methodologies need to be reevaluated and innovated to cope with this complexity. A lot of technological development in recent years has created negative results, some with catastrophic consequences. We are certain that the exploitation of technology without the use of design processes that take cognizance of the long term needs of users and environments will lead to disaster.

I have been thinking about a “Seed” metaphor for Design for India ever since I engaged with John Chris Jones’ book “Design Methods: Seeds of Human Futures”. I have realized that “Design” is indeed like a

seed that needs to be carefully nurtured and cultivated before it yields value, real perennial value, which is why I prefer to use an agri-horticultural metaphor for design as opposed to an business-industrial metaphor of speed and strategy.

“Good Design” – is like a fertile seed that is a product of human imagination and supported by deep convictions of experience from explorations that could be spread over the land to generate huge value for all stakeholders. Only when it is nurtured and cultivated does this seed generate value and produce a farm or a forest which is a manifestation of the seeds potency and this nascent value is quite invisible till it is eventually realised on the ground, a bit like the chicken and egg dilemma. This is why we as designers have to struggle to make our visions and convictions accessible and visible to all those who need our services. Design actions are located at the leading edge of the future that we wish to build. Many attributes and intentional relationships will remain invisible since these would need to be explained through discourse in language, visualized with images and models and in some cases even realized as working prototypes before they can be understood by the stakeholders and the political leadership. To create a viable and desirable outcome through our intentional thought and actions may be a product of the design process but it is not an inevitable happening if society does not nurture that process.

Design is notoriously difficult to define but we do have some compelling definitions that we could use today. According to Harold Nelson and Eric Stolterman in " The Design Way", the process of design is the path of human intentions being pursued by the designer or user of design through the stages of exploration, composition, judgment and action. The stages are iterative and the designer revisits the previous stages to develop conviction and build support for the next move forward. The process of design is in need of active support from the stakeholders and in need of promotion and nurturing if at all it is to succeed and become sustainable. Herbert Simon on the other hand said "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones". A very general definition but others have argued about its shortcomings to understanding design today. Bryan Lawson and Kees Dorst in "Design Expertise" have characterized '*design as*' a variety of things including – *a mixture of creativity and analysis, problem solving, learning, evolution, the creation of solutions to problems, integrating into a whole and as a fundamental human activity* – but declare that no single definition is possible. Yes, it is complex and we will need to cope with this ambiguity in the days ahead.

2. How did Design evolve from being a core human activity to become a modern discipline with a significant future?

Design is a very old human activity that started with the first steps taken by mankind when they attempted to change their environment for their convenience. It is a product of intuition and prolonged thought and deliberate action that is driven by intentions and imagination and most of all deep convictions.

If design is indeed that old, why does it slip our attention when it is critically needed in addressing the meta problems of our times? Why do we have slums, and catastrophes that are as yet unmanageable in our "designed" cities, organizations and in our everyday lives? To understand this dilemma we must look at how we have developed our knowledge resources to help solve these very same dilemmas and also understand why these abilities are failing us in this modern age of rich information access and archived scientific knowledge.

Design evolved gradually and reached a very high degree of refinement and resolution in our villages and living spaces of our traditional societies in the pre-industrial age. The Mayan, Harappan and Indo-Gangetic settlements in India and the Chinese civilizations are results of such evolutionary innovations that used design thought and actions. This craft based evolution was permitted by the interplay of time and the ingenuity of the local craftsman and local leadership, which created a vast body of traditional wisdom, that is today still embedded in the rural and village life in places such as India, but may have been lost in many other centres around the world. The Indian village is unique since it has had a long period of undisturbed evolution till it was rudely disturbed by the arrival of ubiquitous communication and

globalization in the post independence era. The Indian village survived the vagaries of the industrial revolution since it could form a self sustaining loop of local requirements and the historical stage of village evolution ensured that it had reached a level of autonomous existence based on the availability of local resources for the most part and with very little dependence on the external world by way of trade or social contact. These are evident in the offerings by Christopher Alexander through all his substantial books about the essence of design.

Today this kind of design, at a fundamental level of form giving, has all but been forgotten by the mainstream and it is replaced by a form of professional activity that is seen as dealing more with aesthetics rather than with the fundamental structure and meaning production systems of our society. This needs to change in an era where science and technology are being placed at the hub of our decision making pathways when they can only provide information and knowledge about the world but not about what is desirable to be done to the world. So while technology tells us what is possible we do need to look at design with its participative and integrating methods to find out what is desirable and valuable for a sustainable future. It is therefore my argument that education, business and governance must re-establish contact with this very old discipline, in its older form and purpose, which has got sidelined in our belief in specialization and in our proclivity to the use explicit knowledge resources even in situations when values and feelings need to be the decision drivers and not analytic facts couched in scientific arguments.

The history of design for me did not begin with the industrial revolution but it is perhaps the oldest ability of humans and it pre-dates both science and art, in my definition. "*Design is human intentions and actions that create new value*", Harold Nelson states categorically that humans did not discover fire but they designed it. With this definition we can link the earliest human use of design, perhaps, to the very first use of fire to keep other animals away, for security, as Richard Dawkins tells us in his "Ergasts tale", fire was used some two million years ago. The science of fire was still far away in the future, but humans used fire long before they knew how to make fire or even understand its dynamics. Tool making, settled agriculture, mobility and technology followed in ever increasing rapid evolution of thought and action. In rural India the crafts traditions are a reminder of these integrated times when design was inseparable from many forms of human expression. Human history and design history are intertwined inextricably till we discovered formal education and then the whole story crumbles into specialization and analysis over generalist and synthesis, unselfconscious design as a core human activity is sacrificed at the alter of academic disciplines of science, technology and management.

This model about History of Design shows us the unfolding of design as a natural human activity that intuitively preceded rational use of knowledge as science and technology across all the stages of human evolution and these are listed below in a brief summary.

Pre-History

1. Hunter / Gatherer / Caveman

The Fire & Axe Revolution starting over 2 million years ago

2. Nomadic Culture to Settled Agriculture

The Water Mobility to Wheel Revolution and Social Evolution over several hundred thousand years

3. Stone Age to Bronze Age

The Craft & Technology Revolution (see Levi Strauss, Structural Anthropology 2 – chapter on "Race and History") over several thousand years.

Ancient to Recorded History

4. Exploring the Intellect and Symbolic Communication

From the Greeks to (modern) Europe, Egypt, India, China, Americas {Mayan}

The Science & Communication Revolution (from the mystic to the rational thought and formal logic) over the past several hundreds of years.

5. Technology & Industry & Application of Science
The Industrial and Technological Revolution

Contemporary History on to the Future

6. Hi-Tech & Information Tech - Age of Computing
The Information (age) / Revolution (from Bits to Bytes) over the past hundred years

7. Content and Databases - Search and Communication
The Knowledge Revolution over the past few decades

8. Innovations, Integration and Creativity
The Creative Revolution (The Design Revolution?)
New Economics - The Value of One and Social Networks over the past few years.

Pierre Teilhard de Chardin had predicted the complexification of the human condition and he proposed the formation of the Noosphere, which we are witnessing today at the social, and the technological levels but our ethical tools are lagging far behind to cope with this massive shift towards “Omega Point” that he had proposed as a direction for man. More that at any other time in history we need today to address the role of values and ethics in dealing with the huge conflicts that we face as humans, all divided by nationality, religion, economic class, gender and other categories, all man made and therefore artificial, according to the wisdom of the Indian philosopher Jiddu Krishnamurthy. Design is affected by each of these divides and we will need to mobilize our understanding of these conditions before we can address the “wicked complexities” that they produce in their wake.

3. What are the unfolding dimensions and orders of Design that we can call the “Ethical Vortex of Design”?

In 2006 I was invited to speak at the IDSA conference in Austin Texas where I presented a very brief paper titled "Giving Design back to Society: Towards a Post-mining Economy". The title sounds pompous and unrealistic, but look at it this way. A few years ago the Supreme Court of India banned all harvesting of timber from the forests of the Eastern Himalayas and instantly 400 odd local timber and plywood based factories in Assam and the Northeast of India had to down shutters. Germany and many Western nations introduced stringent laws banning the import of textiles with Azo dyes and the Indian handloom industry was in a tizzy and had to seek Government help to re-train hundreds of thousands of weavers and dyers involved in the age old craft in India, big change in a hurry. More recently the state Government of Delhi had to ban all public transport busses, taxis and scooters using petrol and diesel due to environmental action by local NGO's and soon with Court intervention and community action, CNG or Compressed Natural Gas was introduced as an alternate fuel with dramatic and positive effect.

I sense these and other transformations as fore-runners for a massive transformation when material and economic interests will give way to social and ethical interests. Design could be a central capability that if used at many levels, produce effects far beyond the aesthetic and performance levels that we are used to today. Both environmental as well as social concerns influenced my own work in bamboo. The need to find alternatives for cultivated resources to sustain a huge need for material artifacts and an alternate industry as well as the social need to solve the immense problems of poverty in rural India and other parts of the world have informed the work that we did over the years. Working with and using bamboo one realizes how amazing is the concept of fertile soil to make materials that are both strong and abundant. Reflecting on my three decade old association with the crafts of the Northeastern Region of India and on the lessons that we have learned about design and bamboo from the craftsmen of the Northeast gave many insights about design, at three distinct levels. I call them the “Three Orders of Design” and these are briefly explained below.

The First Order of Design: The Order of Design of Material, Form & Structure

This level of design is recognized by most people and is the commonly discussed attribute. Here material, structure and technology are the key drivers of the design offerings as these

help shape the form that we eventually see and appreciate in the artefact. We can appreciate the offering as an honest expression of structure and material used and transformed to realize a particular form that is both unique as well as functional. It is here that skill and understanding of the craftsmen are both used to shape the artefact through an appropriate transformation with a deep understanding of its properties and an appreciation of its limitations.

The Second Order of Design: The Order of Design for Function & Feeling – Impact & Effect

This level is influenced by utility and feeling of a society and is largely determined by the marketplace as well as by the culture in which it is located. Here aesthetics and utility are informed by the culture and the economics of the land. We can sense and feel the need for the artefact and the trends are determined by the largely intangible attributes through which we assess the utility and price value that we are willing to accord to this particular offering, which is quite independent of its cost.

The Third Order of Design: The Order of Design for Value – Meaning and Purpose

This level is shaped by the higher values in our society and by the philosophy, ethics and spirit that we bring to our products, events, systems and services. At this level value unfolds through the production of meaning in our lives and in providing us with our identities and these offerings become a medium of communication in themselves, all about ourselves. It is held in the politics and ethics of the society and is at the heart of the spirit in which the artefacts are produced and used in that society. There are deeply held meanings that are integral to the form, structure as well as some of the essential features which may in some cases be the defining aspects of the offering, making it recognizable as being from a particular tribe or community. These features define the ownership of the form, motif or character of the artefact and these are usually supported by the stories and legends about their origin and give meaning to the lives of the initiated.

All three layers are important and we need to learn to appreciate our creations along all three axes if we are to reach a sustainable offering in the days ahead. Design of our traditional artifacts embrace these layers and when we embark on the making of our new and innovative products for new markets we will need to pay a great deal of attention to all three orders of the design spectrum if we are to reach a semblance of sustainability and order in the future.

The unfolding “Vortex of Design” that I had used as a model in my IDSA lecture gave way to the “Ethical Design Vortex” that moved through these three orders in sweeping and overlapping stages to include various manifestations of design thoughts and actions along a growing spiral of influences and categories listed below:

- The First Order of Ethics in Design
Material – Craftsmanship – Function – Technique – Structure
- The Second Order of Ethics in Design
Economy – Society – Communication – Environment
- The Third Order of Ethics in Design
Politics & Law – Culture – Systems – Spiritual

This organization is still work in progress and my critics and friends will help me refine these and make them more acceptable in the days to come. I am not alone in thinking up these various categories but I

must take a detour of about four decades of reading and acknowledge the influence numerous thought leaders who have shaped my perceptions and values in my current understanding of design.

4. Who are the thought leaders who have anticipated these expanding dimensions of Design particularly from an ethical perspective?

I have below a list of papers and books that I have drawn on to develop these ideas and arrive at the conclusions offered at this stage. The lists A & B under the “References” section are indicative of the ones that I have immediately used for this paper but there are many more that have stimulated me to think on these lines and they would be too numerous to relate and even recall at this stage. However I am listing below both the categories used of the Ethical Vortex of Design explained above and alongside I have named the corresponding thought leaders to permit the reader to make their own journey forward from here. This is a very personal list and it is not exhaustive.

- 1st Order of Design
 - **Material** – Norman Potter, Bauhaus masters (Paul Klee, Johannes Itten, Josef Albers et al)
 - **Craftsmanship** – Charles & Ray Eames, David Pye
 - **Function** – Donald A. Norman, R Buckminster Fuller, Frei Otto
 - **Technique** – John Chris Jones, Bruce Archer

- 2nd Order of Design
 - **Science** – Bruno Latour, Bryan Lawson, Ulm masters (Otl Aicher, Hans Gugelot, Horst Rittel et al)
 - **Economy** – Hazel Henderson, Bryan Czeck
 - **Aesthetic** – Mihaly Csikszentmihalyi, Jasper Morrison
 - **Social** – John Thackara, Donald Schon, Liz Sanders, G K VanPatter
 - **Communication** – Klaus Krippendorff, Umberto Eco, Gui Bonsiepe

- 3rd Order of Design
 - **Environment** – Victor Papanek, Gregory Bateson, NID masters (H K Vyas, S Balaram et al)
 - **Politics & Law** – M K Gandhi, Tomas Maldonado, Victor Margolin
 - **Systems** – Stafford Beer, Harold G. Nelson, Wolfgang Jonas and John Heskett
 - **Culture** – Claude Levi-Strauss, Christopher Alexander
 - **Spiritual** – Pierre Teilhard de Chardin, Jiddu Krishnamurthy

5. Are there some critical cases in this broader field of Design that could provide clues for our journey forward at each of these ethical nodes towards an “Integrated Design of the Future”?

The lecture is accompanied by a visual presentation and these slides will show cases across some of the categories mentioned above with an attempt to show the ethical relationships that each of these stand for as an exemplar of the listed categories above. Some of these will cover more than one category and that in my view is quite normal since the value is never held in just one attribute but in the synthesis of many often conflicting variables that have been elegantly and ethically resolved. Some of these are listed below but these are just indicative of the ones that I may eventually use based on availability of appropriate information and access to images from the authors of the works. The list below is therefore not exclusive to the category in which they appear and there are already many cases around that use design at the levels that we describe in our paper but we may not yet be aware of these since both designers as well as the media may have overlooked the huge value that has already been unfolded by these unheralded and as yet unknown offerings by ordinary but remarkable people. Several of these case studies came to light when we explored sustainable design across many sectors as part of our research for the set of posters that we produced at NID with the help of faculty and students for the World Economic Forum as a backdrop for their meeting at Davos in January 2009. There may be many more out there to be discovered and celebrated and yet others to be mobilized as design opportunities to be nurtured and taken forward with design vision and action.

Case Studies in Transformation

These case studies are illustrated and expanded in the visual presentation that accompanies this lecture and the web links for further information are provided in the visual presentation format.

- **Material & Craftsmanship** – Textiles from recycled paper yarn and fabrics.
- **Process & Technique** – Aravind eye care system, Lijjat *papad* through women's action.
- **Technology** – ITC e-Choupal: rural e-commerce system, Paul McCready's solar powered flights
- **Form & Function** – *Biksha patra* of the Jain saints in India, Patient engagement at Mayo Clinic
- **Economic** – Amul cooperative dairy system, Jawaja collaborative artisanship
- **Social & User behavior** – Sulabh Toilets redefine sanitation, Daily Dump: home composting
- **Collaborative** – Wikipedia networks, Linux open source
- **Environment** – Furaat water harvesting, Industree Crafts social entrepreneurship
- **Social & Political** – Gandhi and Khadi revolution, Grameen Bank micro-credit
- **Systems** – Project Better Place: cars without pollution, John Todd in Buckminster Fuller Challenge.

6. How do we move towards a new design education that can “Create the Unknowable – the future for all of us”, in an ethical manner and still be in tune with the needs of our times.

Design for me is a basic human activity as well as a professional activity performed at many levels by a variety of professionals with their vast range of skill sets and an equally wide range of motivations and intentions, some deep and profound and some definitely shallow and short term, all of which may be needed and necessary based on the complexity and the context that is being addressed.

Yes, political will must be brought into the equation if massive change is to be achieved in getting a city or even a country to feel right for its citizens and it must accommodate all the ethical dimensions in an integrated manner. The quality that Christopher Alexander has called "The Quality without a name", in his book the "Timeless Way of Building", is not about some transient Fashion but a very durable and amazing quality that can be sensed and felt but which cannot be seen or explained in words. How then do we get this quality into our design education of the future is the big question that design teachers and philosophers must ponder going forward. It is for me about touching and changing design and not about the designer and we must look at the emerging contours of explorations from many contributors such as the Kaos Pilots in Denmark and the NextD initiatives in New York and the d-school experiments in Stanford to see how the design education of the future may be shaped.

In Conclusion

Design must be returned to the society as a culture forming and shaping process with an ethical and sensitive activity that is multi-dimensional, unselfconscious and ubiquitous. All our professions and academia must be steeped in the design ethic and take ownership of relevant parts of it if we are to discover the true power of the discipline at the leading edge of human evolution which should be both environmentally sustainable as well as socially equitable in the days ahead.

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Bio Data Summary: September 2009

M P Ranjan

Designer and Faculty,
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As a member of the faculty since 1976 he has been responsible for the creation and conduct of numerous courses dealing with Design Theory and Methodology, Product and Furniture Design and numerous domains of Digital Design. He has conducted research in many areas of Design Pedagogy, Industrial and Craft Design and on the role of design policy in various sectors of the Indian economy. He has held many administrative positions at NID and is currently Head, NID Centre for Bamboo Initiatives at NID. Besides publishing several papers on design and craft he has edited numerous volumes of NID publications including the "Young Designers" series and is author of a major book titled "Bamboo and Cane Crafts of Northeast India" (1986) and two CD-ROMs titled "Bamboo Boards and Beyond" (2001) and "Beyond Grassroots" (2003) which contain all his papers and reports on bamboo and on design. He was responsible for the creation of the Indian Institute of Crafts and Design at Jaipur and he acted as its Director in the formative stages. He helped redefine the Bamboo & Cane Development Institute, Agartala and set up the programmes to establish the new format. He has advised the State Government of Uttaranchal in defining their strategy for bamboo based resource development and institution building strategies. He is co-editor of a major publication "Handmade in India" which documents the crafts of India and is produced by the Development Commissioner of Handicrafts, Government of India.

As a professional designer he has handled many design projects for industry, government and international agencies in areas of product design, interior design, exhibition design, craft design and design policy. As Chairman of NID's consulting Design Office from 1981 to 1991 he was responsible for managing over four hundred professional design projects handled by the Institute in that period. He has headed the NID's Publications and Resource Centre as well as the Information Technology initiatives as Chairman Computer Centre and Head Apple Academy at NID. He completed several major projects for the UNDP and Government agencies to demonstrate the role of bamboo as a sustainable craft and industrial material of the future. These innovations contributed to the creation of new strategies for the use of bamboo in India. Recent projects include a set of posters on Sustainability for the World Economic Forum and strategies and products for Tripura State Bamboo Mission.

M P Ranjan was born in Madras in 1950 and after his schooling and junior college there he joined NID as a design student in 1969 in the PG programme in Furniture Design. He joined the Faculty at NID in 1972 and for a short while, between 1974 and 1976, worked as a professional designer in Madras before returning to NID as a full time faculty member in 1976. He now teaches fulltime at the National Institute of Design, Ahmedabad. He is on the Governing Council of the IICD, Jaipur and the Chairman, Geovisualisation Task Group set up by the Department of Science and Technology, Government of India.

His website set up in late 2004 is a growing resource of writings and visual presentations on his numerous interest areas, projects and teaching programmes. <http://homepage.mac.com/ranjanmp> In 2007 he created a blog called "Design for India" on thoughts and policy initiatives for the spread of design in all sectors of the economy. <http://www.design-for-india.blogspot.com> Over the past 24 months with 55,000 visitors from 5400 cities worldwide and with 125,000 page views it has become a major platform for Indian design discourse.

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