

Lesson 1

Introduction to Patterns and Frameworks

Design patterns capture expert knowledge in such a way that others can apply them, and gain the benefits of expert experiences. Frameworks capture expert knowledge at the level of implementation. Maharishi Vedic Science provides the complete knowledge of Veda, the source of Natural Law, within one's own simplest awareness.

Main Points

1. The goal of software development is to build reliable, reusable and extensible systems. Frameworks and patterns help us to archive this goal. The technology to directly experience the transcendental Unified Field is the key for individual and collective success and fulfillment.
2. Many patterns decouple objects by introducing more abstraction so that objects don't depend on a concrete implementation. More abstraction gives more flexibility. The more one is in tune with the abstract field of Pure Consciousness, the more support of Nature will be experienced. Water the root and enjoy the fruit.
3. Design patterns explicitly capture expert knowledge and design tradeoffs so that an inexperienced software engineer can use this knowledge. Maharishi Vedic Science provides knowledge of the Unified Field of all the Laws of Nature, and from this the ability to enjoy mastery over all the Laws of Nature.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) Patterns and frameworks are promising techniques to manage the challenges of software development we face today.
- 2) Patterns capture design expertise and make it accessible to non-experts.

3) **Transcendental Consciousness** is the field of all knowledge.

4) **Wholeness moving within itself**: In Unity Consciousness, all of the intelligence and structure at the basis of the universe is realized as the lively qualities of one's own inner intelligence.



Lesson 1a

Introduction to Advanced Software Development

To be able to support more extensive and important applications of software systems, we must develop better and better methods for software design and development. Maharishi Vedic Science provides the complete knowledge of Veda, the source of Natural Law, as the complete basis for the development of individuals, and society.

Main Points

4. Advanced Software Development means a set of methods capable of supporting the need of the times for larger, and more critical, software systems. Maharishi Vedic Technologies provide the ability to develop more advanced qualities of consciousness, capable to sustain the ever expanding pace and extent of our lives.
5. Current methods in software development are growing to support larger and larger systems, but have not yet solved the problems of correspondingly increased complexity and errors. Maharishi Vedic Science provides a complete basis for error-free life, by establishing life in the simplest level of Natural Law, which is the home of all the laws of nature.
6. The ultimate direction for software engineering must include the knower, the ability to capture the expertise and intelligence of the designer, as well as the tools to express this into larger systems. Maharishi Vedic Science is Atma based science, the science of Nature based on gaining the full knowledge of the Self, one's own simplest, pure, unbounded state of awareness.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) Software Development methods are expanding to support larger and larger systems.
 - 2) Current methods for software development are now moving to include the expertise of the designers, as well as the technical aspects of program development.
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- 3) **Transcendental Consciousness** is the home of all knowledge, the field of pure intelligence.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, all of the intelligence and structure at the basis of the universe is realized as the lively qualities of one's own inner intelligence.



Lesson 2

Design Patterns: Façade, Strategy and Template method

In Software Development, we find that even a small number of simple design patterns are powerful enough to support a wide range of systems. Maharishi Vedic Science provides knowledge of the Unified Field of all the Laws of Nature, and from this the ability to know any of the fundamental patterns of Nature, and thus to accomplish anything.

Main Points

7. The Façade pattern provides a unified interface to a set of interfaces in a subsystem that makes the subsystem easier to use. Pure Consciousness provides a unified interface to all aspects of creation, and the daily experience of Pure Consciousness makes life much more enjoyable.
8. The Strategy Pattern allows the creation of different strategy objects that all have a unified abstract interface. The Unified Field is the abstract field that creates all diversity in creation.
9. The idea of the Template Method is to implement all the invariant parts once in the parent class and let subclasses implement their own variant parts. All thoughts and actions that are in tune with all the Laws of Nature will find maximum fulfillment.

Connecting the Parts Of Knowledge with the Wholeness Of Knowledge

- 1) Template Method lets subclasses redefine certain steps of an algorithm without changing the algorithm's structure.
- 2) The Template Method bears similarities to Strategy Pattern except that the latter uses delegation to implement variant steps of algorithm in the child class where as Template Method uses inheritance.

3) **Transcendental Consciousness** is the never changing field at the basis of all change.

4) **Wholeness moving within itself**: In Unity Consciousness, the eternal and universal creative activity that maintains the universe is realized as the self-referral dynamics of one's own consciousness.



Lesson 2a

Software Principles and Advanced Software Development

To locate a basis for advanced software systems, we look first at the fundamental principles of OO programming, which support the basic structure of all patterns. Maharishi Vedic Science provides the complete knowledge of Veda, the source of Natural Law, within one's own simplest awareness.

Main Points

10. Maharishi Vedic Science provides the basis for all success in life, by providing the fundamental mechanisms for increased creativity, clarity, and efficiency. It is the basic mechanisms of *Object Oriented programming* that are at the basis of all patterns, they have the same goals; abstraction, flexibility, and support for expansion.
11. *Polymorphism* is the most important abstraction in OO, the basis for unifying diversity and change, and providing a wholeness of all parts (sub-types). With the increasing evolution of consciousness through regular experience of TC, one automatically begins to experience the unified basis of all life, the field of PC, as the basis for all activity.
12. *Inheritance* is the most fundamental abstraction in OO, it describes increasingly more general and powerful levels of a system in a unified manner. The field of Pure Consciousness is the purely abstract unified basis of everything in the Universe, brought to our conscious awareness through the TM program.
13. *Composition* is how we construct larger systems from parts, while maintaining the integrity of the parts. Maharishi's SCI describes how all parts of creation function in one unified and integrated manner, because they are all just aspects of one field of pure intelligence. Diversity is an illusion, wholeness is the reality.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) Patterns express important ideas for good software design.
 - 2) All patterns are based on the fundamental principles of OO design, and apply it for best advantage in various situations.
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- 3) **Transcendental Consciousness** is the field of all knowledge.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, all of the intelligence and structure at the basis of the universe is realized as the lively qualities of one's own inner intelligence.



Lesson 2b

Software Systems and Patterns

To locate good examples for patterns, we look at some of the most successful areas of existing software. Maharishi Vedic Science locates the basis of individual success as the Unified Field of Natural Law, the basis of all of creation.

Main Points

14. One basic and important idea of software is the *observer*, which links multiple software elements in a simple manner. Maharishi Vedic Science locates the silent level of pure consciousness, as the observer or witnessing value of Cosmic Consciousness; responsible for all activity, but silent and separate from it.
15. The highly complex and well-developed windowed graphic interface systems like Java Swing often utilize the *model-view-controller* pattern (MVC), which separates the three main modes of activity. Maharishi Vedic Science presents the three most fundamental elements of Natural Law as *rishi*, *devata*, and *chhandas*, which then combine to create all the other elements of creation.
16. Design patterns formalize the ideas and methods already in successful practice by expert software developers. Maharishi Vedic Science provides a complete and formal description, and direct experience of the methods utilized by Nature to organize the entire universe!

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) There are many good ideas and intelligent designs at the basis of current software systems.
 - 2) Patterns capture this expertise, and make the organizing power of the underlying ideas available to other designers.
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- 3) **Transcendental Consciousness** is the home of all knowledge.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that the intelligence responsible for the entire cosmic patterns of creation are expressions of one's own Self, one's own inner unbounded intelligence.



Lesson 3

Design Patterns: Iterator

For any kind of aggregate object the basic requirement is to traverse through the elements of the aggregate object. The *iterator* pattern decouples the traversal of an aggregate object from the collection structure, and allows one to easily access all information in an easy, portable manner. All entities in the universe and their corresponding actions have a unifying source: the Unified Field. By stabilizing one's awareness on this level of the Unified Field of Pure Consciousness, one has direct access to everything in creation.

Main Points

17. The *iterator* object provides a way to access the elements in a collection without exposing the concrete implementation of the collection. As one grows in awareness, one spontaneously begins to have greater access to all elements in creation.
18. An *internal iterator* makes the details of operations on a collection transparent, making it easy to operate on all elements. With greater development of consciousness, one can automatically gain any result, as all the elements of Natural Law spontaneously respond to all desires.
19. By providing an *Iterable* interface to any real or virtual data source, one can easily integrate it into all programs. By using a simple standard technique of transcending, one gains access to all of Nature's Intelligence.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The iterator pattern lets one encapsulate and decouple the iteration process from the data structure it operates on.
- 2) The iterator pattern uses a self-referral structure, which hides the state of the traversal, giving it more power and flexibility.

3) **Transcendental Consciousness** is the silent self-referral state of pure awareness.

4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that all elements in the universe are expressions from and within one's own silent pure self-referral state of consciousness.



Lesson 5

Functional Iterators

Extending the Iterator Pattern to functional forms makes it more powerful, unifies parts and wholeness, through a self-referral structure. In Natural Law from the experience of higher states of consciousness, the quality of Unity pervades all parts of creation.

Main Points

20. The basic *iterator pattern* supports sequential processing of individual elements of a collection. Life without the development of Higher States of Consciousness means action concerned with the field of differences, sequential processing of each element in waking state of consciousness. Through development of more unified awareness, one is able to deal with all parts of life from a unified perspective.
21. Extending iterators to support *internal* and *selective iterators* provides a way to deal with the wholeness of collections all at once; a more integrated and powerful style of functioning. Development of higher states of consciousness through regular transcending spontaneously elevates life to a level where wholeness dominates, and one can easily achieve anything.
22. Providing support for the *Iterable interface* makes it easy to integrate these more powerful functional approaches into the regular Java style of loops in programs. Through the regular practice of the TM program one automatically develops a more integrated style of functioning, where the unbounded awareness of TC is experienced at all times, Cosmic Consciousness.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The functional extensions of iterators provides a more powerful and integrated style of programming.
 - 2) By using functors and integrated (internal) iterations, one develops a more powerful abstractions capability, leading to better programs, re-use, and extensibility.
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- 3) **Transcendental Consciousness** is the completely integrated state of pure consciousness.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, one experiences that all activities in creation are just concrete expressions of one's own silent, integrated pure consciousness; Atma.



Lesson 5

Composite Pattern

The Composite Pattern unifies parts and wholeness, through a self-referral structure. In Natural Law from the experience of higher states of consciousness, the quality of Unity pervades all parts of creation.

Main Points

23. The *composite pattern* provides a simple way to describe any hierarchical composition of parts into a single wholeness; providing uniform treatment of all components. Through development of more unified awareness, one is able to deal with all parts of life from a unified perspective.
24. The Composite Pattern uses a self-referral structure, which provides an infinite descriptive power. Self referral is the most fundamental structure and dynamics of natural law; and the experience of the state of pure self-referral, pure consciousness, is the basis of all success.
25. The Composite pattern is very simple, but is the basis of all basic recursive data structures; lists, trees, graphs, ... The Transcendental Meditation Program is very simple, but provides the basis for all success in life, the experience of Pure Consciousness.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The Composite pattern represents part-whole hierarchies of objects.
 - 2) With the Composite pattern clients can treat all parts of any system with a uniform interface, for any system, infinite power!
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- 3) **Transcendental Consciousness** is the unified source of all qualities.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that all relative qualities in creation are just expressions of one's own unified simplest level of Pure Consciousness.



Lesson 3b

Patterns: Visitor

In many applications there is a rather complex set of representative data structures that are relatively fixed, but which we want to add more and more capabilities (operations) to them. Nature is one universal integrated intelligence, and all of the laws of Nature are available at any time, any place, everywhere. As one grows in the experience of the Unified Field, all possibilities are available.

Main Points
1. The <i>Visitor Pattern</i> is useful when the object structure rarely changes, but you want to be able to easily add new operations over the structure; more and more capabilities over a data representation. The Veda is the home of all the Laws of Nature that support all operations in the universe; one can easily do anything.
2. <i>Visitor Pattern</i> is an application of a larger concept of programming languages, double dispatch, where the operation invoked depends on the types of all (multiple) arguments. Natural Law always responds to every element in a situation to produce a result that is evolutionary and life supporting.
3. The <i>visitor pattern</i> allows one to separate the creation of data structures from the operations on them, and thus automate much of the processing for many applications. Nature automatically operates in an optimal fashion in every situation, always spontaneously evolutionary.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The *visitor pattern* allows one to decouple operations from the data structures that they operate on.
 - 2) This pattern uses a quality of *self-referral*, in the accept method, to make operations on a structure easier and more flexible.
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- 3) **Transcendental Consciousness** is the silent self-referral state of pure awareness.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that all activity in the universe are expressions from and within one's own silent pure self-referral state of consciousness.



Lesson 6

Command & Mediator Patterns

The Mediator Pattern replaces many-to-many interactions with one-to-many interactions between the mediator and its colleagues. It promotes loose coupling by keeping objects from referring to each other explicitly.

The Command Pattern "*Encapsulates a request as an object*". This encapsulation helps in decoupling of sender from receiver of the request. The sender has no knowledge of the receiver's interface.

In the relative world, everything seems to be decoupled, while in reality everything is connected at the level of the Unified Field so that all parts in creation can interact with each other in a harmonious and evolutionary way.

Main Points

26. The *Mediator* pattern provides a central object that encapsulates all sub-object interactions, and is responsible for controlling and coordinating the interactions of a group of objects. The Unified Field is the source of creation that coordinates all interactions in the relative world.
27. The *command pattern* supports undo functionality by storing state information in the Command objects. The Unified Field contains all knowledge in its simplest and most abstract form.
28. The *command pattern* decouples, and unifies, the action, target, and client components. The field of consciousness is the transcendental unified field at the basis of all activity.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The *command pattern* encapsulates a request as an object.
- 2) The *command pattern* encapsulates the intelligence of an action, and thus allows any receiver to effortlessly invoke that action.

3) **Transcendental Consciousness** is the field of pure intelligence.

4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that all aspects of creation, all activities, are some quality of one's own simplest state of pure Intelligence.



Lesson 6

State Pattern: *Spontaneous Right Behavior*

The *state pattern* provides a way to transparently adjust the behavior of an object to a variety of appropriate implementations. The evolution of higher states of consciousness allows one to automatically adjust to all situations, for an optimal evolutionary life..

Main Points

29. The *State Pattern* allows an object to alter its behavior when its internal state changes. The object will appear to change its class. Knowledge is different in different states of consciousness.
30. The *state pattern* supports an easy way to give the appearance of an object changing its (sub-) type, by different behaviors in each (sub-) state. With development of higher states of consciousness, Nature automatically organizes the most appropriate behavior in every situation; always correct, evolutionary, life supporting..

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The *state pattern* allows a simple abstraction of state changes of an object.
 - 2) The *state pattern* encapsulates a very basic element of all computing, the changes in state of an object/system, which all states implement the same goal, just in different circumstances.
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- 3) **Transcendental Consciousness** is the stable state of pure intelligence, of pure silence.
 - 4) **Wholeness moving within itself**: In Unity Consciousness, one realizes that all states of the Universe, all changing and unchanging behaviors in creation, are expressions of my own simplest state of pure consciousness - Atma.



Lesson 6

Proxy and Chain of Responsibility Pattern

A proxy controls access to another object and can be used in various contexts such as caching results, representing a virtual or remote object, etc. The Chain of Responsibility avoids coupling the sender of a request to its receiver by giving more than one object, a chance to handle the request.

All desires (requests) that are in accord with Nature find immediate fulfillment, because they get the support of all the Laws of Nature.

Main Points

31. The *proxy pattern* provides a surrogate or placeholder for another object to control access to it. In Unity Consciousness one realizes that every relative object you see around you, is just an expression of the same Pure Consciousness you experience within yourself.
32. In the *chain of responsibility* pattern, the request is passed to a dynamic chain of objects, which should contain one relevant handler. The level of Support of Nature we experience depends on the level of our consciousness, Nature can handle any request. The more we are in tune with Nature, the more fulfillment we will experience.
33. Both patterns work by decoupling the sender of a request (message) from its receiver. In Natural, only by detaching from the field of perception, and gaining the experience of transcendental consciousness - beyond all activity , can one gain success in the field of activity.

Connecting the Parts of Knowledge With the Wholeness of Knowledge

- 1) The Proxy & COR patterns both allow one to dynamically handle requests in a flexible manner.
- 2) Both patterns utilize the ability to connect new methods, packages of intelligence, to a request dynamically.

3) **Transcendental Consciousness** is the unified source of pure intelligence.

4) **Wholeness moving within itself**: In Unity Consciousness, the entire creation is just an expression of one's own simplest state of pure intelligence, Pure Consciousness.

