

# GENERAL SYSTEMS AND THE PROCESS OF CREATING A PAINTING

Pamela Vesterby and Vincent Vesterby

Poulsbo, Washington, USA

## ABSTRACT

This paper describes the developmental procedure Pam uses as a watercolor artist, and points out some of the general systems factors that play roles in her process. The discussion compares the forms of these factors in Pam's process with their general descriptive definitions. These descriptive definitions are from the published work of Vincent Vesterby from 2007 to 2010, and from current work.

Twenty-two general systems factors were identified in relation to portrait painting: (1) initiator, (2) consequent-existence, (3) self-identity, (4) transformation-point, (5) situation, (6) situation-development, (7) precursor, (8) structural-logic, (9) general-factor, (10) design-archetypes, (11) psychological-archetypes, (12) combinatorial-enhancement, (13) bonding-coherence, (14) organizational-coherence, (15) template, (16) direct-transitional-factor-development, (17) sequentially-direct-precursor, (18) reality-referent, (19) feedback, (20) self-organization, (21) deep-structure, and (22) emergence.

Many of these factors play roles at the spatial, temporal, and material foundations of reality, at the foundations of all that exists. That they are also present and playing their roles in the creation of art, which requires the extraordinary complexity of living systems, conscious awareness, culture, and creativity, demonstrates the universality of general systems.

Keywords: Bertalanffy, emergence, deep-structure, general systems, self-organization

## INTRODUCTION

This paper describes the developmental procedure Pam uses as a watercolor artist, and points out some of the general systems factors that play roles in her process. The discussion compares the forms of these factors in Pam's process with their general descriptive definitions. These descriptive definitions are from the published work of Vincent Vesterby, and from current work (Vesterby 2007, 2008a,b,c,d, 2010).

Her painting begins with an inspiration, or in general systems terms an *initiator*. An initiator is a factor that acts as a catalyst for change and it does this by way of *consequent-existence*. The existence of one factor has the consequence that another factor comes into existence.

In the 1980's an illiterate and financially poor man stood alone against a corrupt sheriff of a little town in the Cascade Mountains of Washington State. This story acted as the inspiration, the initiator, for her painting.

### The Mountain Man's Story

Working as a maintenance man for a small town in his mountain valley, the mountain man was instructed by the mayor to divert untreated sewage from the town's treatment facility into the river. The mayor had other plans for the money set aside to upgrade the

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town's system. The mountain man refused to ruin his valley's river and reported the pollution to the Environmental Protection Agency. The mayor fired him immediately.

As the mountain man got into his old pickup truck to go home up the valley, to tell his wife the bad news, he saw the angry mayor send the sheriff and his deputy running to their police car. They were planning to catch him and give him a beating.

The mountain man had only a small head start, but he also knew the valley better than the sheriff. He took back roads and escaped from the law in the twists and turns.

The lawmen gave up the chase and parked their police car at the town's only bridge across the river. Confident that the mountain man would eventually have to cross the river to go home up the valley, they waited for him. They waited there all night.

Meanwhile, the mountain man made his way down the valley where he crossed the river at an old ford. Proceeding slowly by an unused road he drove his old truck back up the valley to his cabin home.

In the morning he had a good breakfast, and told his wife that he was going down to the bridge to greet the sheriff in the light of day while there were witnesses. The sheriff and mayor both knew where he lived after all.

### The Artist's Procedure

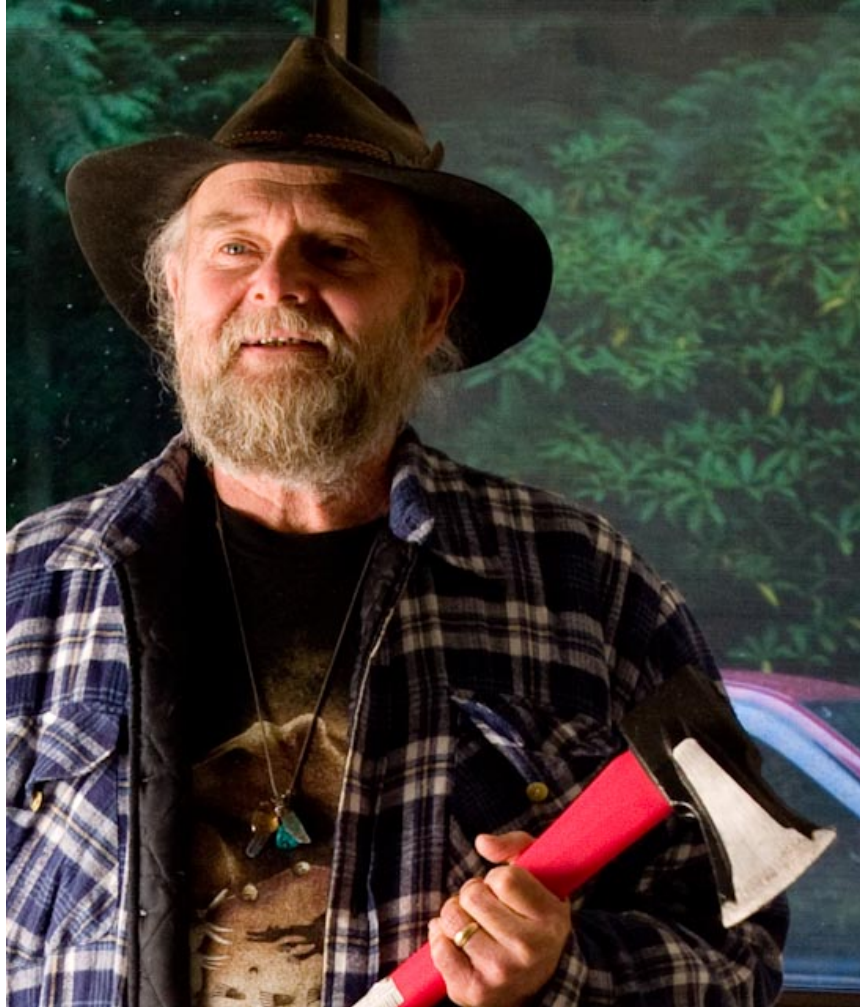
The artist wanted to represent an aspect of the *self-identity* of the mountain man, his inner character. Self-identity includes all the qualities possessed by something that exists, all the factors that play roles in its existence and intrinsic nature, from its primal existential factors, to the factors of the organization of its components, to the features or qualities it has as a whole. The artist wanted the final image to evoke an understanding of what type of man would be able to do what he did without back up of any kind, neither financial, nor physical, nor even group support.

The decision to paint the mountain man was a *transformation-point* for the artist. A transformation-point results in change in the nature of what is happening. Once the decision was made, the artist began preparations for creating the painting.

Initially there are various elements—the artist's intention, the subject, the art materials, and the creative process. In general systems this is called a *situation*. A situation is a combination of interrelated factors. The art process is a *situation-development* wherein various components of the situation change together interrelationally.

After the occurrence of the inspiration, the artist photographed the mountain man from several angles (Figure 1) as the second stage in the situation-development of the painting. This physically brought the subject into the creative process. The photographs were the raw material from which the final image would be developed.

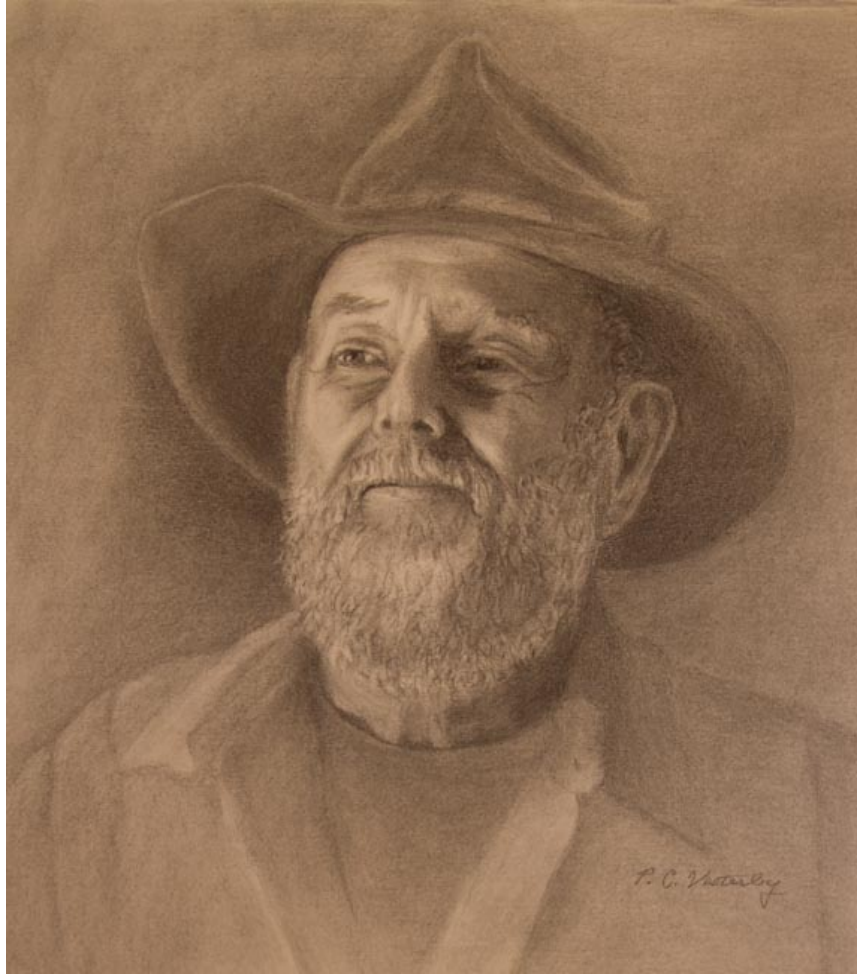
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**Figure 1. Photograph of Mountain Man**

Next the artist sketched proposed factors of the design as further raw material (Figure 2).

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**Figure 2. Mountain Man Charcoal Sketch**

These drawings and photographs acted as *precursors*. A precursor is a pattern-of-organization that has enough of the qualities of a more developed pattern-of-organization to be similar to it, while not having enough of the required qualities to be that pattern, or to play the more developed roles of the developed pattern. The precursors began the process of allowing the artist's mind to start working with the factors of the portrait's content. Precursors cannot play the roles of the fully developed pattern, such as evoking the intended response from viewers of the finished painting. The precursors do not carry the artist's intention. Their role in the artist's process is to carry forward basic elements which will eventually exist in and play roles in the final image.

Now the artist entered the phase of the painting in which *structural-logic* played a role in composing the design. Structural-logic is the manner in which the intrinsic qualities of something that exists determine the types of relations that something can have with other things that exist. Structural-logic has always been used by painters and its use in painting reached sophisticated levels during the Renaissance.

There are certain cases of structural-logic that can be called *archetypes* because they have been long recognized as of particular significance. There are archetypes that occur in social and business situations that are recognized by systems dynamics (Maani and

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Cavana, 2007). There are archetypes that occur in human psychology as universal patterns of thought. And there are archetypes that are used in artistic composition. An archetype is a *general-factor*, a pattern-of-organization of material structure and process that can play a role in many different situations. There are several archetypes that have always been used by painters. Some are *design-archetypes*, some are *psychological-archetypes*, and some play both roles. The design-archetypes play roles in relation to the viewer's vision and attention. Psychological-archetypes play roles in relation to the viewer's cultural and instinctual responses.

### Psychological-Archetypes

The artist selected psychological-archetypes to communicate the non-verbal message of the painting.

Humans have an instinctual response to light and to dark values. "Sunny day, everything's A OK." (*Sesame Street*, 1970) Or... in the dark, you cannot tell what is hunting you. When used by a painter the contrast between dark values and light values creates an area of interest.

Eyes are archetypically significant. A person's eyes can give clues to the character of a person. The artist wanted the mountain man's eyes to be primary, so the cool blue of his eyes was surrounded with warm color. The contrast between warm and cold colors added interest.

As the psychological design elements were chosen the artist kept in mind the original intention which was to create a portrait of this man's character. What to include in the painting and what to leave out was considered.

1. He was posed with a wood chopping axe in his hands to make him feel comfortable with being photographed, but the axe was left out in the painting because archetypically an axe is a weapon of war.
2. The dove feathers he stuck in his hat were kept in the image. The dove feathers as a design component of the painting influences the attitude or emotional response of the viewer because they represent a cultural archetype. The dove is an archetype representing peace. This man would rather talk his way out of a fight than use violence.

### Some Design-Archetypes

Design-archetypes help direct where the eye travels in the image and keep the viewer's attention within the painting.

The rule of thirds is one archetype used for design purposes. A painter draws a tic tack toe grid over the surface area that the painting will occupy, dividing it into nine equal areas. The locations where the lines intersect are the visual spots the human eye seeks out naturally. One or two of these intersections can be used as locations for important components of the image, thus placing them for maximum effect.

Another design choice indicates action or quiet. Using diagonal lines in a drawing can have more dramatic appeal than horizontal or vertical lines. Diagonals signal action and horizontals or verticals can give the viewer a more static message.

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A simple design option is the central plan, where the object of interest is in the center of the painting. Centering the point of interest leaves the surrounding area as a frame.

Another, more developed, central plan is where the object of interest is in the center with diagonal pathways leading across the painting in an X pattern. This adds pathways for the eye to travel.

The S curve pathway creates a different kind of route for the eye to follow. S curves are used commonly to lead the eye into a painting. Obvious S curves can be seen in the depiction of the curve of a river or a road in paintings.

The viewer has no reason to look at the emotional message of an artist if the design looks boring. For this reason every corner of the painting should have a different look from every other corner. Difference in every corner increases the visual interest of the viewer. It is good to keep in mind a useful quote from the movie "Aliens" (*Aliens*, 2004) as they hunt the creatures through the space encampment halls, "Check those corners." It is safer that way.

When placed next to each other, the darkest dark value of the painting and the lightest light value will attract the viewer's attention. Contrast draws the eye, warm versus cold, light versus dark, intense color versus dull color.

Artists call the spaces between objects negative space. The negative spaces of the picture should have irregular shapes. Even though negative spaces contain no objects they should not be regular in pattern like squares or equilateral triangles. Irregular negative spaces can increase the organizational interest of the overall design.

### Combinatorial-Enhancement

The design components of the image play their roles together, directing where the eye looks, focusing the attention of the viewer, and influencing the viewer's attitude towards the painting. The psychological and design-archetypes, and other elements of image design, play their roles in combination. The result is *combinatorial-enhancement*. Combinatorial-enhancement is the occurrence of relations between components of a coexistence situation. If there is coexistence, there is relation. The relation is in addition to and existentially-dependent on the existence of the primary components of the coexistence. The occurrence of combinatorial-enhancement is why the whole is greater than the sum of the parts. The enhancement of the combined roles of the design elements has a *coherent* effect on the viewer.

### Coherence

In the field of general systems understanding the term coherence refers to two distinctly different factors, *bonding-coherence* and *organizational-coherence*. The foundational form of coherence occurs when units of matter bond with each other to form compound units, as when atoms combine to form molecules. An example of a developed form of this type of coherence is the connections between railroad cars in a train. With the other type of coherence, organizational-coherence, the parts do not actually bond with one another, but rather are associated with one another in meaningful ways. An example of this is the ordered association of words in a sentence, where the meaning in the sentence depends upon the coherent association of the meanings of the words. This is linguistic coherence. The same type of organizational-coherence occurs in a non-linguistic form in the visual design of a painting. Combined visual patterns helped the artist to achieve organizational-coherence which holds the attention of the viewer and makes the message of the painting

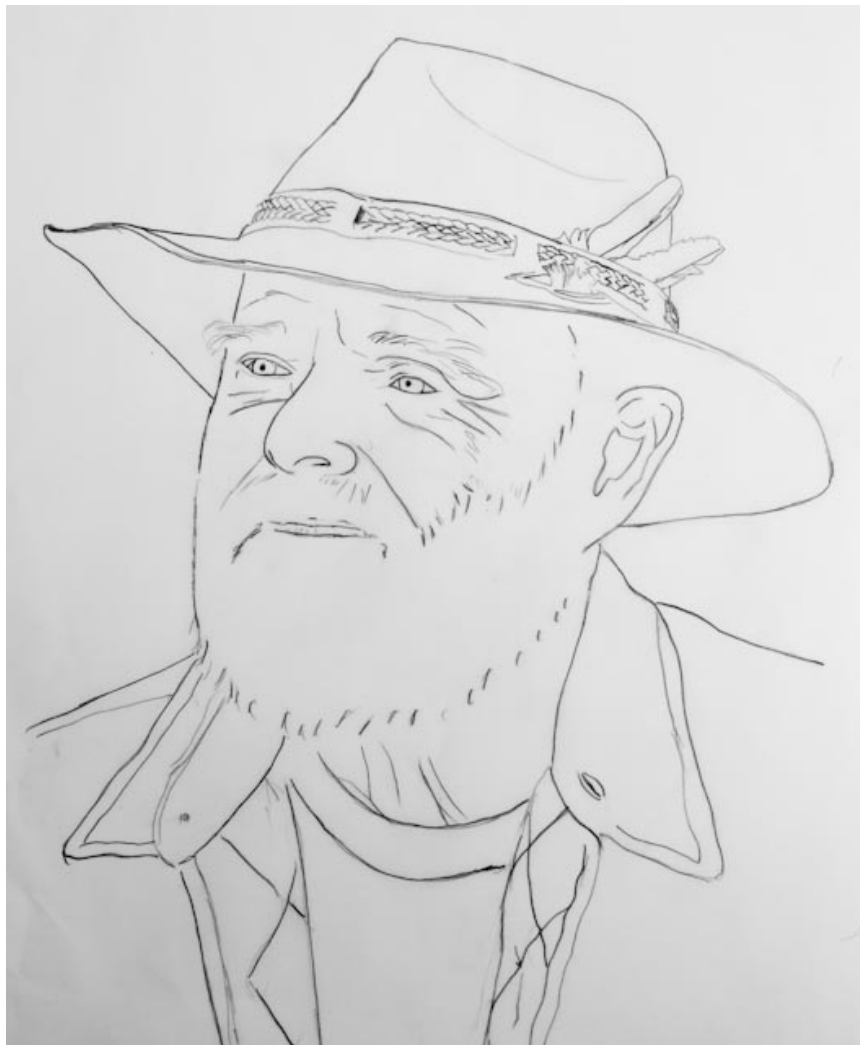
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clear. The intention of the artist emerges in the painting by way of this non-linguistic visual type of coherence.

### Precursors as Templates

After the artist chose the design elements she wanted to use in her painting, she traced an outline of the features of the mountain man from one of the photographs, and transferred it to the painting surface (Figure 3). The photograph, this outline, and the transferred outline are *templates* that carry the precursor pattern-of-organization of the facial features through this part of the artist's process. This template process illustrates *direct-transitional-factor-development*.

With direct-transitional-factor-development from one stage to another stage, the first stage does not turn into the second stage—the physical components of the first stage, (the photograph), do not become the physical components of the second stage, (paper and pencil marks). With direct-transitional-factor-development only the pattern-of-organization undergoes factor development from the template to the new copy.



**Figure 3. Outline of Mountain Man to Be Transferred to the Painting Surface, a Precursor Transfer Template**

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Another example of direct-transitional-factor-development occurs in metal casting. In the process of metal casting, a liquid metal is poured into the hollow space of a mold. When the metal cools, it has taken on the pattern-of-organization of the hollow, which played a role as a template.

In the artist's painting process, the precursor pattern goes through a sequence of stages, each connected through direct-transitional-factor-development. This illustrates the general system factor, *sequentially-direct-precursor*, wherein the precursor originates several stages prior to the development-of-origin of the factor for which it is a precursor. The pattern then persists through a sequence of stages before it becomes an intrinsic quality of the relevant factor, which is the image in the final painting.

The precursor template outline of the mountain man served another purpose as the art process continued. The artist looked to the photographs as her primary reference as she painted, but a painted image tends to shift by small increments in all directions as multiple washes of color are added. With hundreds of applications of paint covering the transferred outline template, the original boundaries of his features were covered up. They were double checked using the outline as a supplementary reference. This helped maintain the boundaries of his features to the *reality-referent* of his actual face.

### Feedback

The deeper an artist gets into the process of painting a particular work, the more possibilities arise that could be useful to the artist's original intention. The more you know about what you are working on, the faster new knowledge comes to you. The reason for this is that the artist is working with an increasing number of connections. This is combinatorial-enhancement both on the painting surface and in the artist's brain. When an artist is painting, the process itself enables further creation.

As the image is being created, *feedback* constantly supplies overwhelming numbers of issues that need to be adjusted. This can be upsetting and discouraging. At the same time the artist receives feedback that tells her the procedure is handling many of these issues. It is encouraging and exciting that the intended message is becoming progressively clearer.

In the middle of the painting process feedback from the painting prompts the artist to add or subtract elements of the painting's design. The feedback can involve various factors, for example where an addition should be placed to support the composition.

The pine tree represented where the mountain man lived—in an old two room cabin surrounded by fragrant pines (Figure 4).



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**Figure 4. This Watercolor Sketch of a Pine Tree Was Added to the Portrait When the Painting Was Half Finished**

The tree was placed in the background in the shadows, where it did not dominate, but added a supportive environment because it placed his face in the context of the forest and the mountains. The placement of the tree also balanced the mass of his coat. His face was located just above the intersection of the low diagonal of his shoulders and the added opposite diagonal of the shadowed tree. This created an X pattern that drew the eye. A difference in the top two corners was also created by the placement of the tree.

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This feedback from the painting is a high level form of process *self-organization*. This might be analogous to what writers experience when they say the story “writes itself,” another form of high level self-organization.

### Self-Organization

Self-organization occurs when factors intrinsic to a prior stage of development determine organizational factors intrinsic to the following stage.

The art process is a situation-development wherein various components of the situation change together interrelationally. The art situation-development is a case of self-organization when factors intrinsic to the art process play roles in determining what follows.

Emergent factors can play self-organization roles in the further existential-pathway-development of the situations from which they have emerged. Working on the whole painting, one spot then another, working around and around, painting the whole thing all together lets the emergent relationships interact with each other.

When the artist worked on one part of the painting, the part just finished elsewhere looked too pale or too dark, too indistinct or too noticeable. The artist chose to work on the whole painting covering every surface over and over. She did not concentrate on just one spot until it was finished before going on to the next area. Working on the whole painting allowed the interrelations of all the design elements and colors to play off each other.

Another example of self-organization is when actors rehearse a play together rather than just learning their parts in isolation. Each actor develops an appropriate response to how the other actors portray their roles. Rehearsing together self-organizes the roles into a coherent portrayal of the play.

### Deep-structure

The representation of his outward appearance was designed to evoke understanding of the *deep-structure* self-identity of the mountain man. Deep-structure consists of the underlying patterns-of-organization of structure and process of lower levels of the hierarchic organization of material-reality that result in the existence and organization of structure and process of upper levels. In order to evoke understanding of his character, deep-structure was put into the painting that resulted in the appearance and effect of the painting as a whole.

The manner in which two colors of paint mix and create a third color is a form of deep-structure. When washes of color are laid down on paper as translucent layers, one upon the other, these washes of color are the deep-structure for the emergent color. The components in the painting that are flat but give the impression of three-dimensionality, by making one thing seem to go to the background and another seem to come forward, also play this role. Both the design-archetypes and the psychological-archetypes play roles as lower level deep-structure components of the higher level final appearance of the painting.

### Emergence

The final image of the portrait results from the coherent pattern-of-organization of multiple factors—the components of the image such as the features of the mountain man,

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the colors of the paint, the stages of the creative process, and so on. The final portrait emerges from the coming together of these components into coherent interrelation (Figure 5).

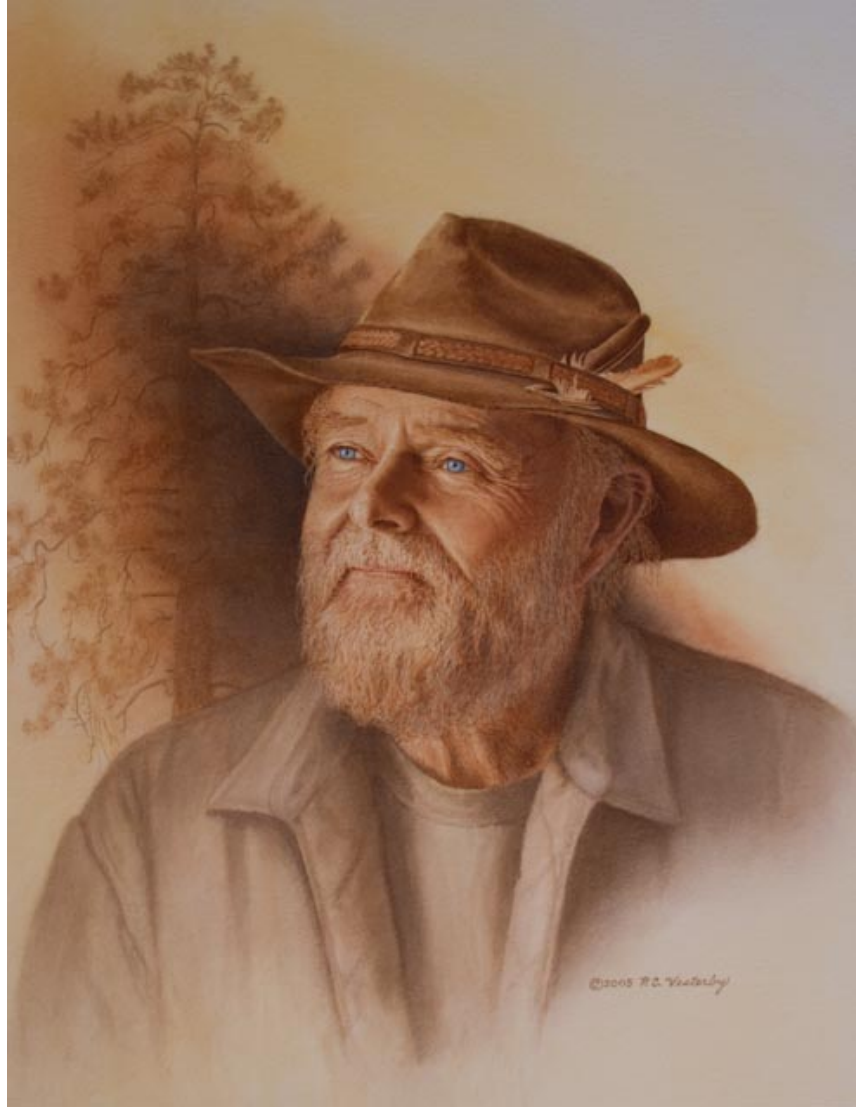
*Emergence* is the general process by which all newly existing material pattern originates. Emergence is the coming into existence of new pattern-of-material-organization as a consequence of motion.

Like essentially all the factors of general systems understanding, emergence develops, occurring in simple form in simple situations where few factors are playing roles and in more complex form in more complex situations where greater numbers of other factors are playing roles.

Foundationally, emergence in its simplest form, occurs with the motion of one unit of matter in relation to another unit. Two units of matter and the distance and direction relations between them constitute a pattern-of-organization. When one of the units moves, the distance and direction relations between get changed, and a new pattern-of-organization between them comes into existence, a new pattern emerges that was not there before. Emergence develops as additional factors join a situation and begin to play their roles in relation to other factors in the situation.

Motion is the foundational factor that makes emergence happen. Additional factors that develop emergence are cause, throughflow, the bonding form of coherence, combinatorial-enhancement, feedback, self-organization, precursors, templates, and organizational-coherence.

Material-reality develops up through the hierarchic organization from elementary particles to humans and their cultures, and further to the universe itself. The level of elementary particles is quite simple compared to higher levels such as organisms, social systems, and ecosystems. People, and many aspects of their culture, such as creativity and art are extremely complex. Emergence at the level of elementary particles is relatively simple, while there are multiple forms of emergence that combine into a highly complex form in artistic creation.



**Figure 5. Mountain Man Painting in Watercolor**

### **CONCLUSION**

Vincent has spent much of his career working at levels below the level of elementary particles, at the ultimate basic foundations of existence (Vesterby, 2008). Pam's art is at the extreme opposite degree of complexity, based as it is on living systems, conscious awareness, culture, and creativity. Yet the general systems understanding of factors that Vincent found with the nature of space, time, and the most basic factors of the foundations of matter, are there playing roles in Pam's artistic process.

This is another proof of Ludwig von Bertalanffy's genius. General systems is universal (Bertalanffy, 1968).

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### Epilogue

Because the mountain man lost his job, he had to move out of the valley. He got himself a lawyer, won a suit for lost wages, bought a beautiful new red truck, and moved back to his mountain cabin. The mayor and the sheriff fled the valley, running from the EPA.

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