

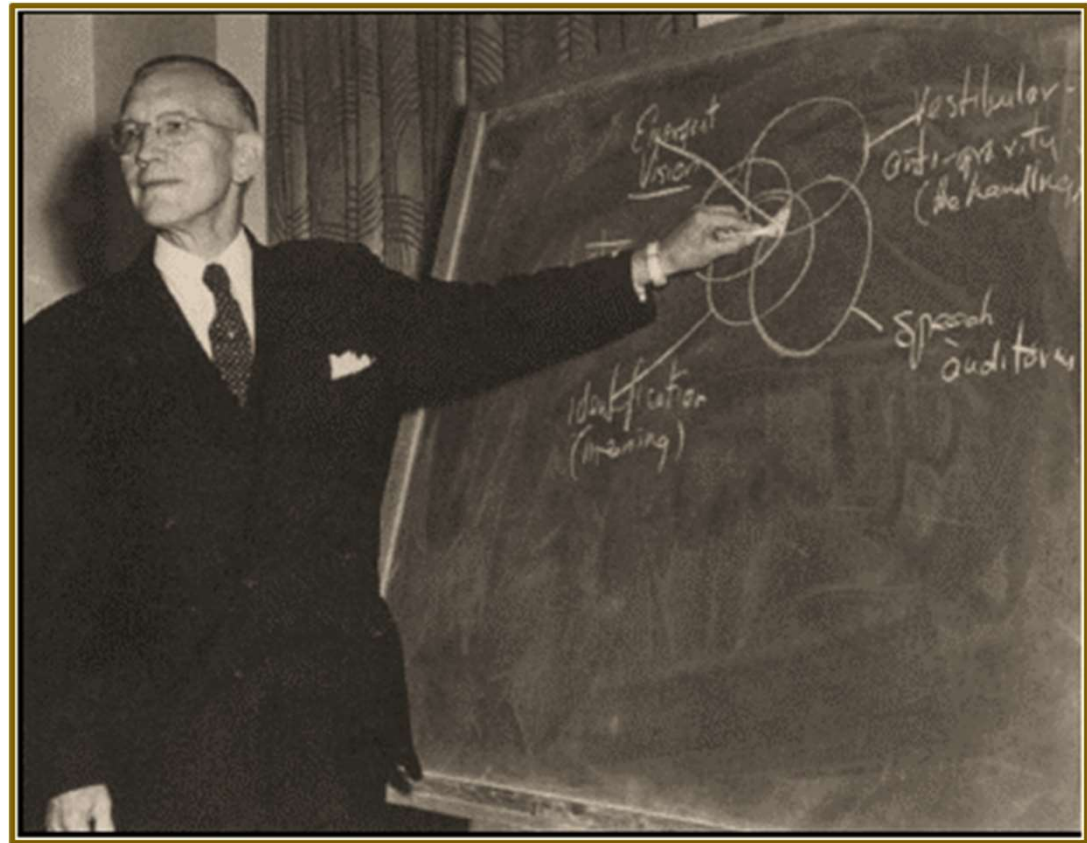


# KISS 2024

## Rhythm, Timing, and Movement

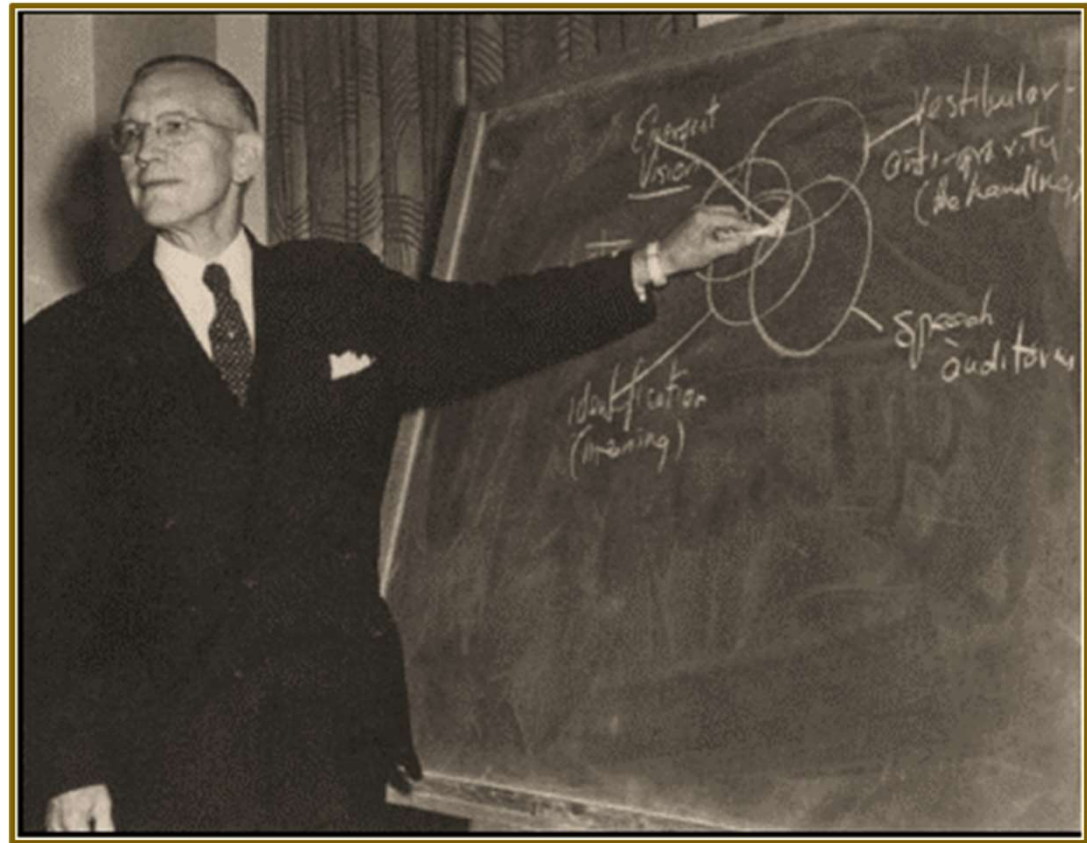
# Vision—The Emergent

- The primary purpose of the visual process is the direction of action.
- The visual process is a pervasive aspect of human behavior.
- Skeffington spoke of Vision as an emergent.



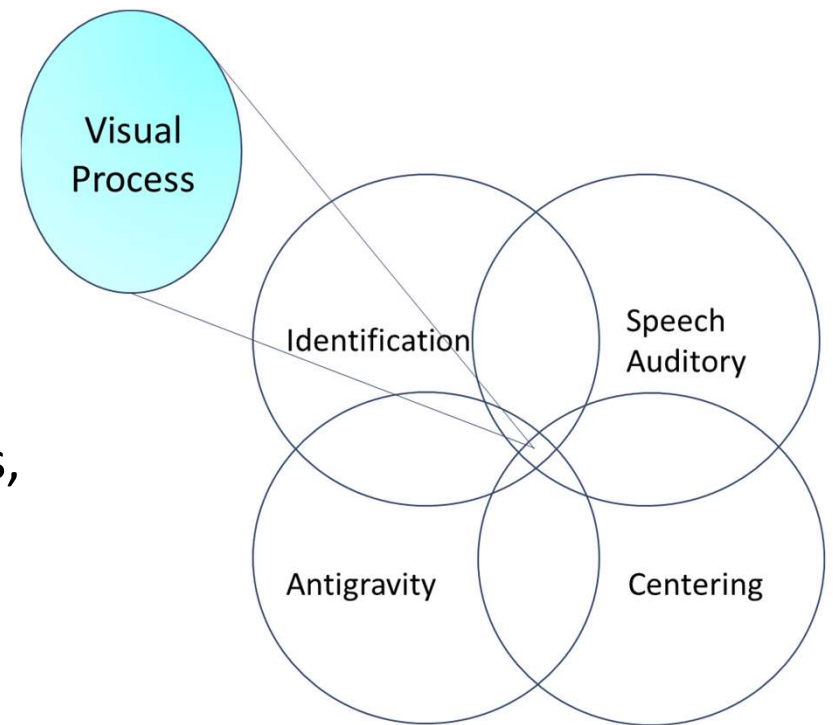
# Four Circles

- The visual process is, itself, invisible.
- The visual process makes itself known through the person's behavior.
- Human behavior emerges as the culmination of a continuous visual process.
- Attempts to freeze or isolate any single aspect of the visual process may be misleading.



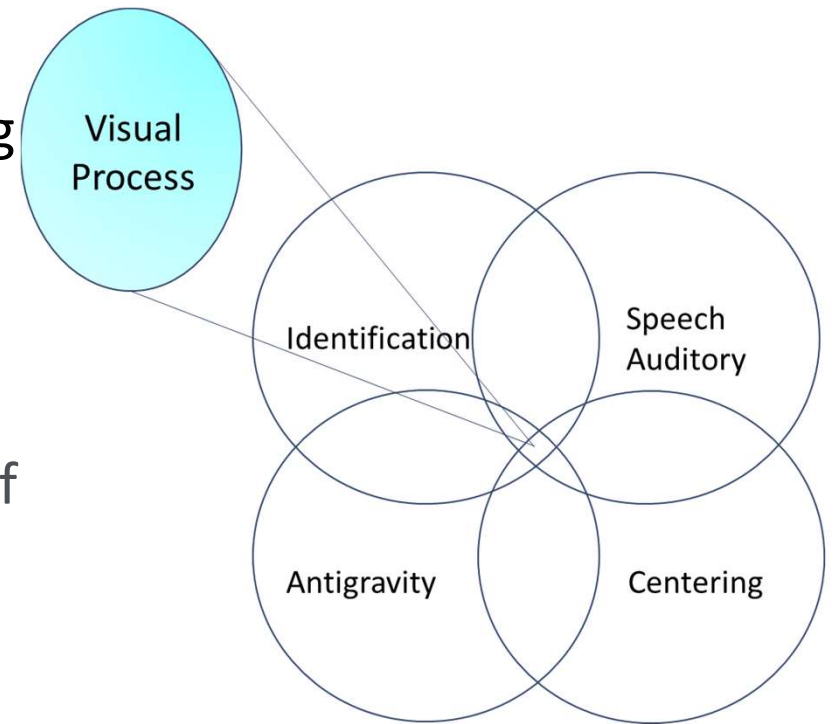
# Vision—The Emergent

- Many people, not grasping what Skeffington was trying to say when he used the term emergent, have spent their time looking at each circle as if one could understand the visual process as the sum of the circles.
- There have been those who wanted to add circles, to make the circle spheres, etc.
- When he drew the four circles, Skeffington was trying to draw a diagram of something we otherwise cannot see.
- When talking about the visual process, we have spent a lot of time going around in circles.



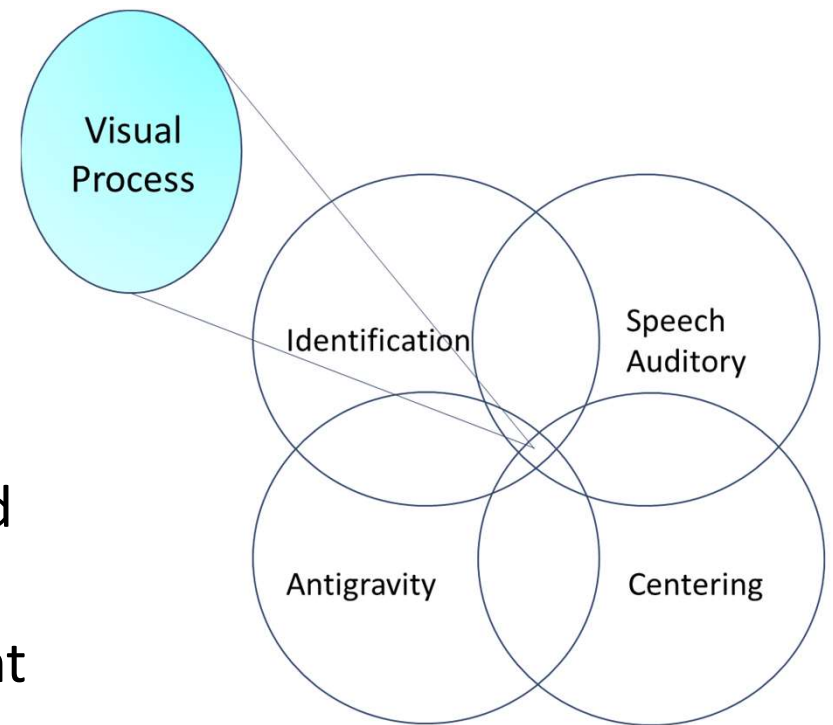
# Vision—The Emergent

- Emergence is the process of coming into being or prominence.
- Emergence occurs when a complex entity has properties or behaviors that its parts do not have on their own, and those properties emerge only when the parts interact as part of a wider whole.
- The visual process, as an emergent, is not a property of any component of the visual system but is product of the continuous interaction of the person within their environment.



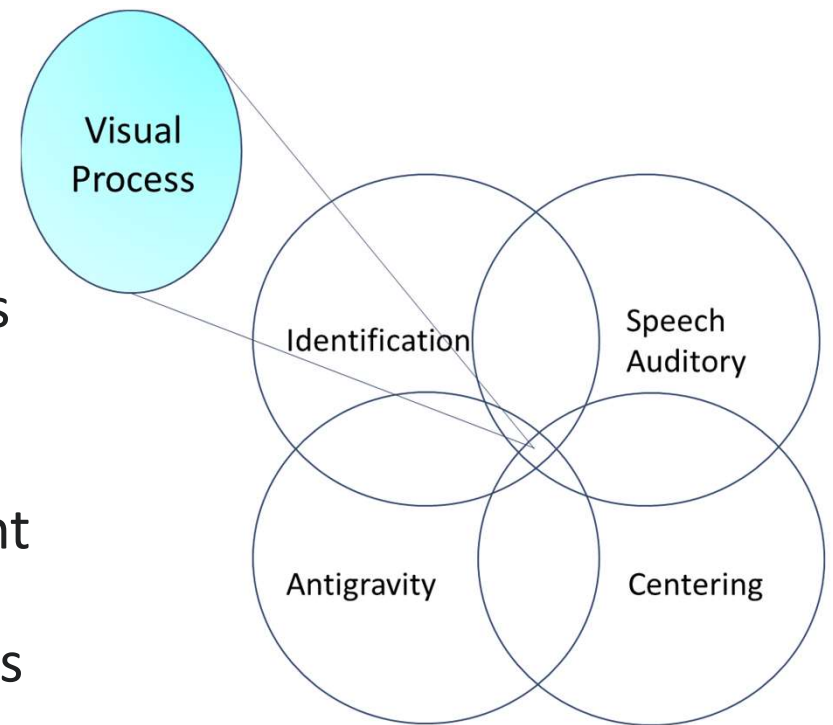
# Vision—The Emergent

- Emergence describes new properties arising within a system due to the interactions within the system.
- The properties of the emergent can be determined only by observing the system, and not by any process of reductionist analysis.
- It is important to understand that an emergent system cannot be understood without seeing the system acting.



# Vision—The Emergent

- Understanding the visual process, or any emergent aspect of the visual process, means understanding the dynamics of the system.
- This does not mean that understanding the anatomy, biology, or the behavior of emergent subsystems is not profitable, but one must remain aware that the overall visual process is not the sum of its parts.



# Qualities of Emergent Vision



- The binocular visual process is there from birth.
- Movement is there from birth (and before).
  - Reflexive
  - Self initiated
- Visual emergence is based on the direction of movement as understood by the person at the time.
- Based on experience, the neonate understands movement differently than an adolescent or adult.



# Qualities of Emergent Vision



- We begin as a bi-symmetric organism equipped to interact with our environment.
- Much of that interaction consists of moving in and out of symmetry to find balance with ourselves and the environment.
- One of the first things that must be learned by the infant is how to regain a stable posture once movement has taken place.

# Rhythm and Movement Moro Reflex



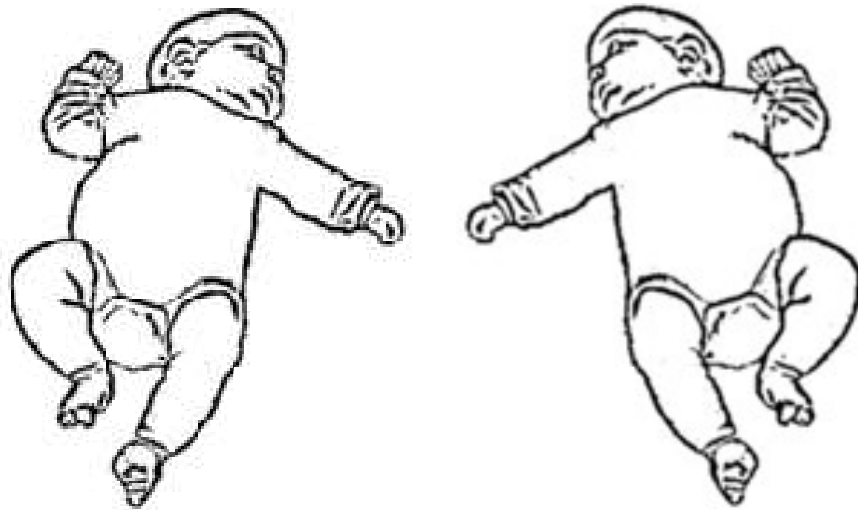
- Reflexive movement tends to be unidirectional and all or none.
- *The normal Moro reflex starts with the abduction of the upper extremities and extension of the arms.*
- *The fingers extend, and there is a slight extension of the neck and spine.*
- *After this initial phase, the arms adduct, and the hands come to the front of the body before returning to the infant's side.*

# Rhythm and Movement Moro Reflex



- The Moro reflex extends the head and neck, arms, and legs.
- The recovery flexion is the alternative movement left to the young child.
- As in the example, some see the recovery as part of the reflex itself, but the abduction and flexion is a complimentary pattern of movement initiated by the child reciprocal to the extension due to the reflex.

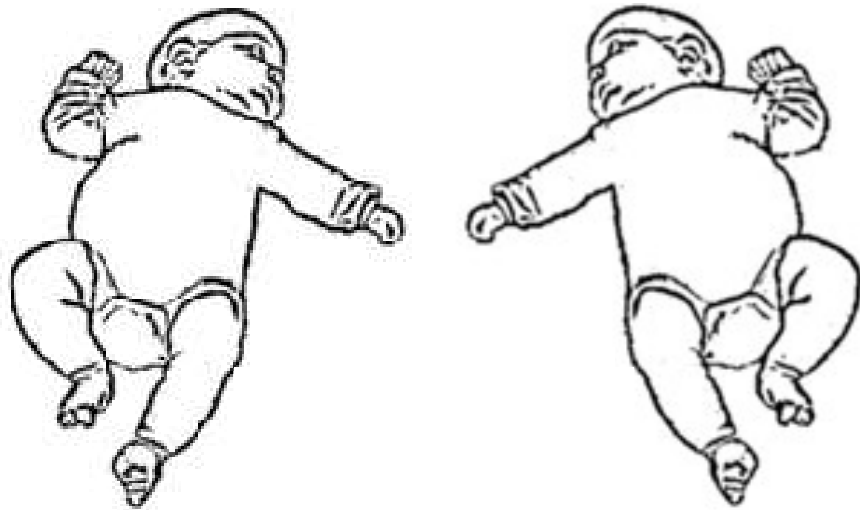
## Rhythm and Movement ATNR



- *Asymmetrical Tonic Neck Reflex elicited by rotating the head to one side causing ipsilateral extension of the extremities towards which the face is turned and contralateral flexion of extremities.*
- *This reflex includes self initiated direction of the head and neck to achieve the alternate patterns of flexion and extension.*

From Hamer EG, Hadders-Algra M. Prognostic significance of neurological signs in high-risk infants - a systematic review. *Dev Med Child Neurol.* 2016;58 Suppl 4:53-60. doi:10.1111/dmcn.13051 Free Access PMID: 27027608

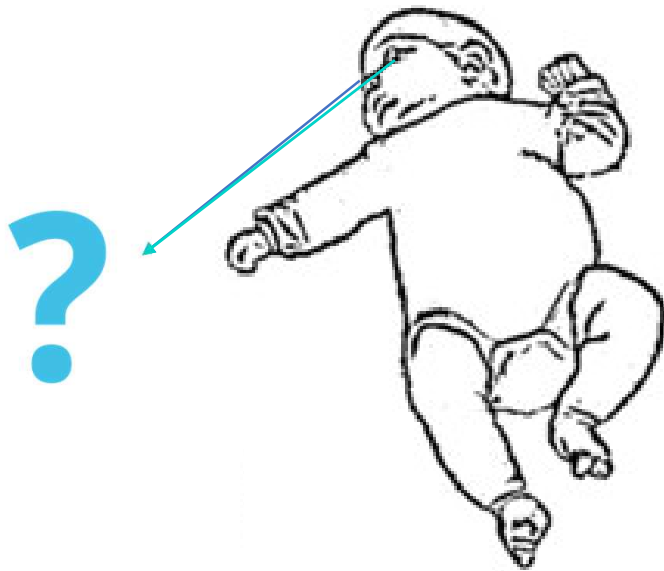
## Rhythm and Movement ATNR



- The previous description begs the question of how and why the infant would achieve the movement of the head needed to trigger the reflexive movement.

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## Rhythm and Movement ATNR



- The previous description begs the question of how and why the infant would achieve the movement of the head needed to trigger the reflexive movement.
- From the point of view of emergent vision, the alignment of the reaching hand and direction of the eyes is worthy of note.

## Rhythm and Movement ATNR

*The infant takes hold of the world with his eyes long before he does so with his hands-an extremely significant fact. During the first eight weeks of life the hands remain predominantly fisted, while the eyes and brain are busy with looking, staring, seeking and, in a rudimentary manner, apprehending.*

*The young infant when awake lies in an asymmetric attitude simulating a fencing position, with the head averted to one side, the arm on that side extended and the opposite arm flexed at the shoulder. This tonic-neck-reflex posture is fundamental in the patterning of eye-hand behavior*

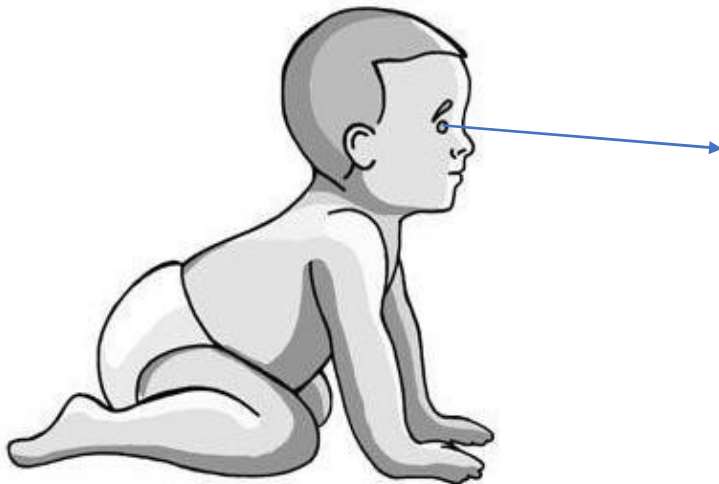
# Rhythm and Movement STNR



- *This reflex is elicited by moving the head up and down passively with subsequent upper extremity flexion and lower extremity extension with neck flexion while neck extension produces upper extremity extension and lower extremity flexion.*



# Rhythm and Movement STNR



- *This reflex is significant for posture, eye-hand coordination, and focus required in activities like sitting, swimming, playing with a ball, etc.*
- Why does the infant move the head?

# Developmental Principles

- Development proceeds from reflexive beginnings as the child learns through reciprocal movement.
- The child gradually refines movement through visual interaction with his immediate world.
- *...he refines movement until he gets an understanding, through experience, of what things are, where they are, how far they are from him.*
- *...he builds an understanding of the world around him by the use of a physiological optics system..., which provides a definite and necessary good light distribution on [the] retina*

Italics from <https://www.reinventingoptometry.com/am-skeffington> Functional Optometric Philosophy



# Developmental Principles

- *All learning... is originally direction of motion, and then ultimately synthesized and abstracted, he reconstructs or builds that again in the same motion pattern.*
- *He builds a total movement pattern in the process we know as vision.*

Italics from <https://www.reinventingoptometry.com/am-skeffington> Functional Optometric Philosophy



# Time and Motion Laws

## Law 1


*When both hands complete their motions simultaneously and are not idle except during rest periods, maximum performance is approached.*

## Law 2

*When motions of the hands are made simultaneously in opposite directions over symmetrical paths, rhythm and automaticity develop most naturally.*

Time and Motion Study by Lowry, Maynard, and Stegemerten. 3rd edition, 14th impression. McGraw-Hill Book Company, New York and London, 1940.

# Rhythm and Posture

- Rhythm is regular repetitive movement.
    - Space
    - Time
  - There is a pattern of extension and flexion that displays increasing purpose and efficiency as the young person develops.
  - Initially the movement has a degree of symmetry about a base posture.
  - The initial movement shifts away from the base and the recovery shifts back towards the base but does not necessarily regain the base.
- 

# Rhythm and Posture

- Through repetitive action, the base shifts towards the posture needed to best solve the demands of a person's life.
- This creates a balance of energy and accomplishment best suited to meet the principal needs of the person in their environment.


# Posture

Posture, in this context, is a quasi-stable arrangement of the self from which movement proceeds and toward which the person returns.

- 1) *Spatiality: position assumed by the body in the three directions of the space and the spatial relationship between the various skeletal segments;*
- 2) *Anti-gravity: gravity is the fundamental external force for posture adjustment, and the postural balance is a response to gravity;*
- 3) *Balance: relationship between the person and the environment.*

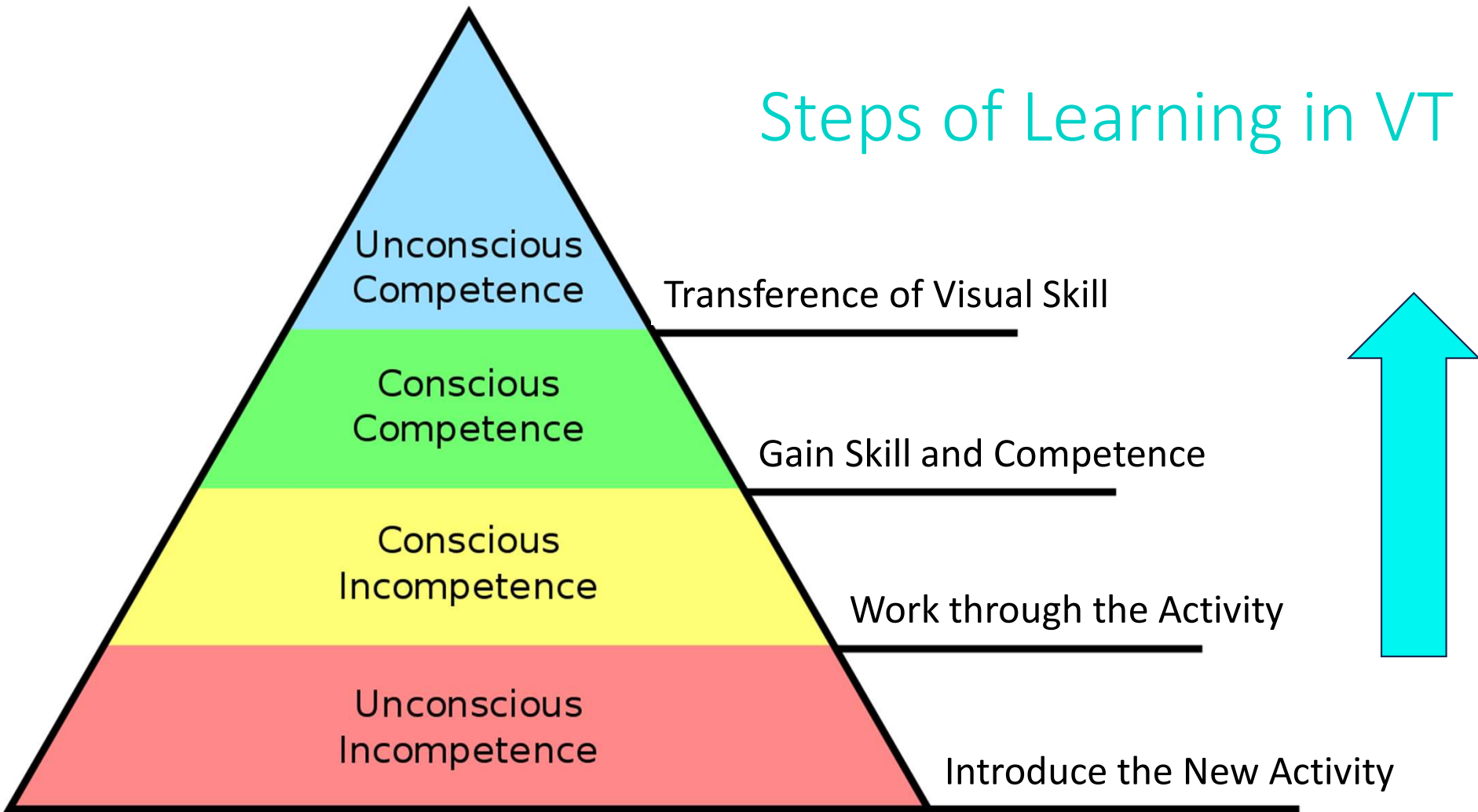
*Francesco Carini, Margherita Mazzola, Chiara Fici, Salvatore Palmeri, Massimo Messina, Provvidenza Damiani, Giovanni Tomasello*  
**Posture and posturology, anatomical and physiological profiles: overview and current state of art**

# Rhythm Emerges from Proficient Movement

- Early patterns of movement tend to be segmented and arrhythmic.
  - When first learning any new skill, the concentration is on the mere accomplishment of the new skill.
  - As a person gains proficiency, a naturally balanced distribution of effort and movement emerges and becomes apparent.
  - The rhythm and timing that emerges is a natural element of well accomplished movement.
- 




## Steps of Learning in VT



[https://en.wikipedia.org/wiki/Four\\_stages\\_of\\_competence#/media/File:Competence\\_Hierarchy\\_adapted\\_from\\_Noel\\_Burch](https://en.wikipedia.org/wiki/Four_stages_of_competence#/media/File:Competence_Hierarchy_adapted_from_Noel_Burch)

# Implications for Visual Training

- One of Kraskin's important principles is that we don't do VT in an effort to address optometric measures.
  - The purpose of visual training is not to accomplish various activities in an effort to live with or overcome visual maladies or diagnoses.
  - The purpose of Visual Training is to provide meaningful experience that leads to more skillful (more balanced) movement.
  - Balanced and skillful movement is the natural product of improved visual skill and vice versa.
  - Rhythm and grace emerge naturally as an aspect of balanced movement.
- 

# Implications for Visual Training



Where does the metronome fit in?

- The metronome can be used to supply a background rhythm that can help support the emergence of efficient balanced movement.
  - Moderate to low volume with a set frequency.
  - In this context, 120 HZ is easily and naturally subdivided to provide different rates of production.
  - Aids development by providing structure that can be used if helpful.
  - Movement matches the beat naturally when the person is sufficiently competent with the task.

# Implications for Visual Training



Where does the metronome fit in?

- The metronome can be imposed on a person who is not yet competent with the VT activity.
  - Tends to be set at a louder volume.
  - Tends to be used at different rates attempting to influence performance.
  - May become overwhelming, especially when discovering or refining a new element of skill.
  - Interferes with development because the metronome may become noise the delays or limits the opportunities for visual development.

# Questions

How might we use a timing standard such as a metronome in the VT room?

What is the primary purpose of using a timing standard such as a metronome in the VT room?

What hazards and/or limitations might be involved when using a timing standard such as a metronome in the VT room?