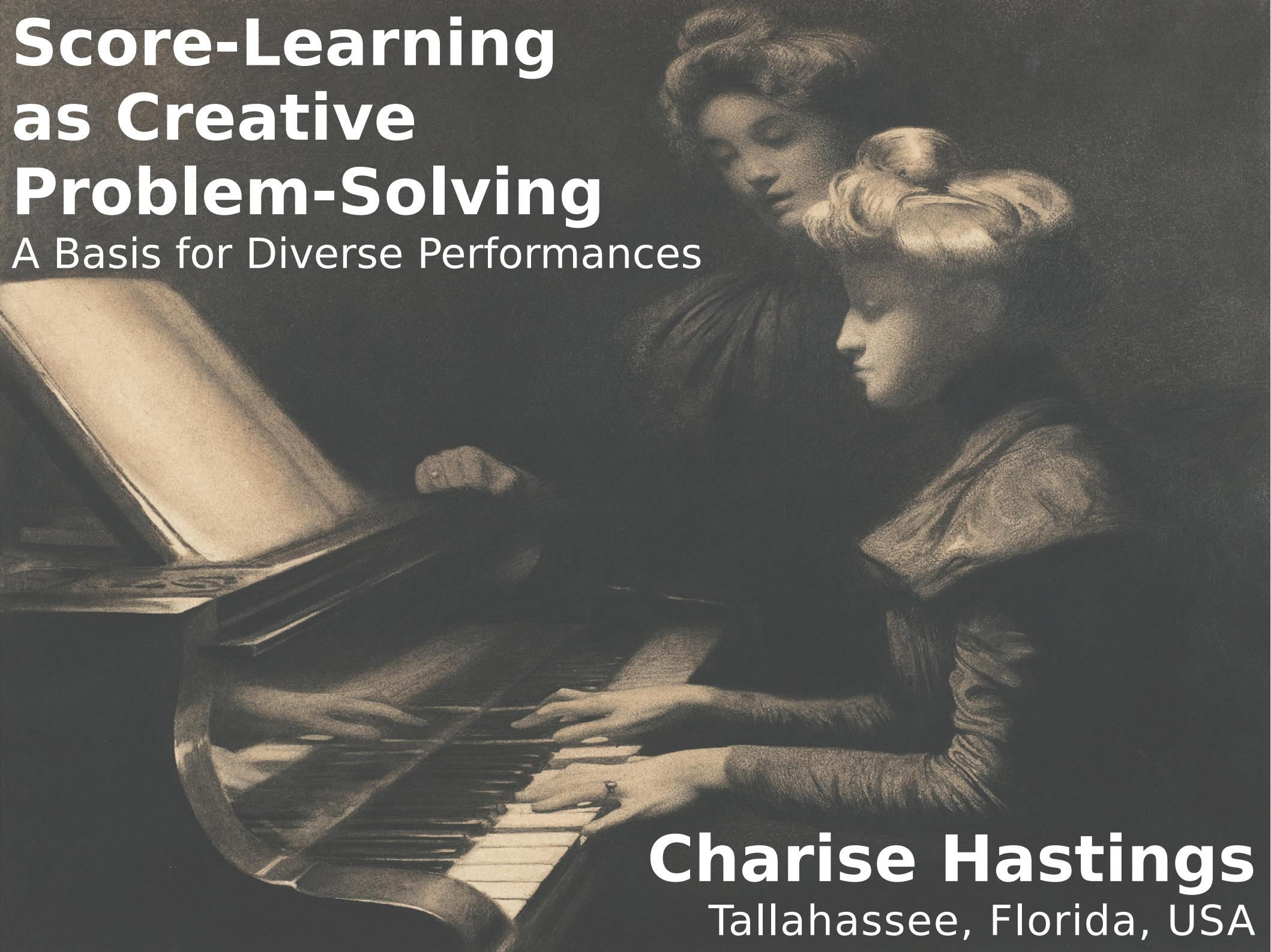
Score-Learning as Creative Problem-Solving

A Basis for Diverse Performances



Charise Hastings

Tallahassee, Florida, USA

Pablo Picasso

Minotauromachy
(etching, 1935)

Guernica
(1937)

Creative Thinking

the process of solving a novel problem

Novel Problem

a problem new to any person

Problem

an undesirable state, and not knowing immediately how to change it

Problem Space

includes all possibilities, factors and means for solving one's problem

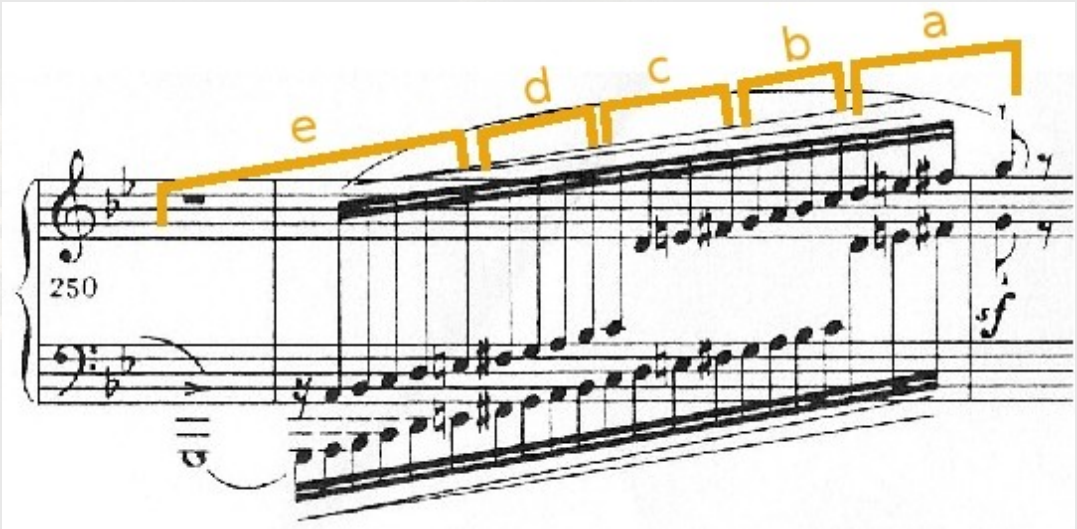
Newell and Simon 1972, Weisberg 2006

Stages of Problem-Solving

1. Represent the Problem
   - well-defined (math equation)
   - ill-defined (learning a score)

2. Match with Existing Knowledge (Strong Method)
   - analogical transfer: problem solved

3. Apply Heuristic Processes (Weak Method)
   - add constraints
   - create subgoals



Novick and Bassok 2005, Weisberg and Reeves 2013

Sample Interview Questions

General

Does the Ballade overall seem cohesive to you, or is that one of its problems?

Do you favor a particular edition for Chopin?

What is the emotional character of the coda?

How can students remember their musical goals while practicing?

Score Indications

How do you interpret the accents?

What do you think about the pedal indications?

How should students interpret the meter with the accented off-beats?

Technical

How do you help students achieve accuracy in the left hand?

How can students learn to switch octaves quickly in the right hand?

How can students keep from fatigue or tension?

Goals

play in a way that is fresh and true to oneself

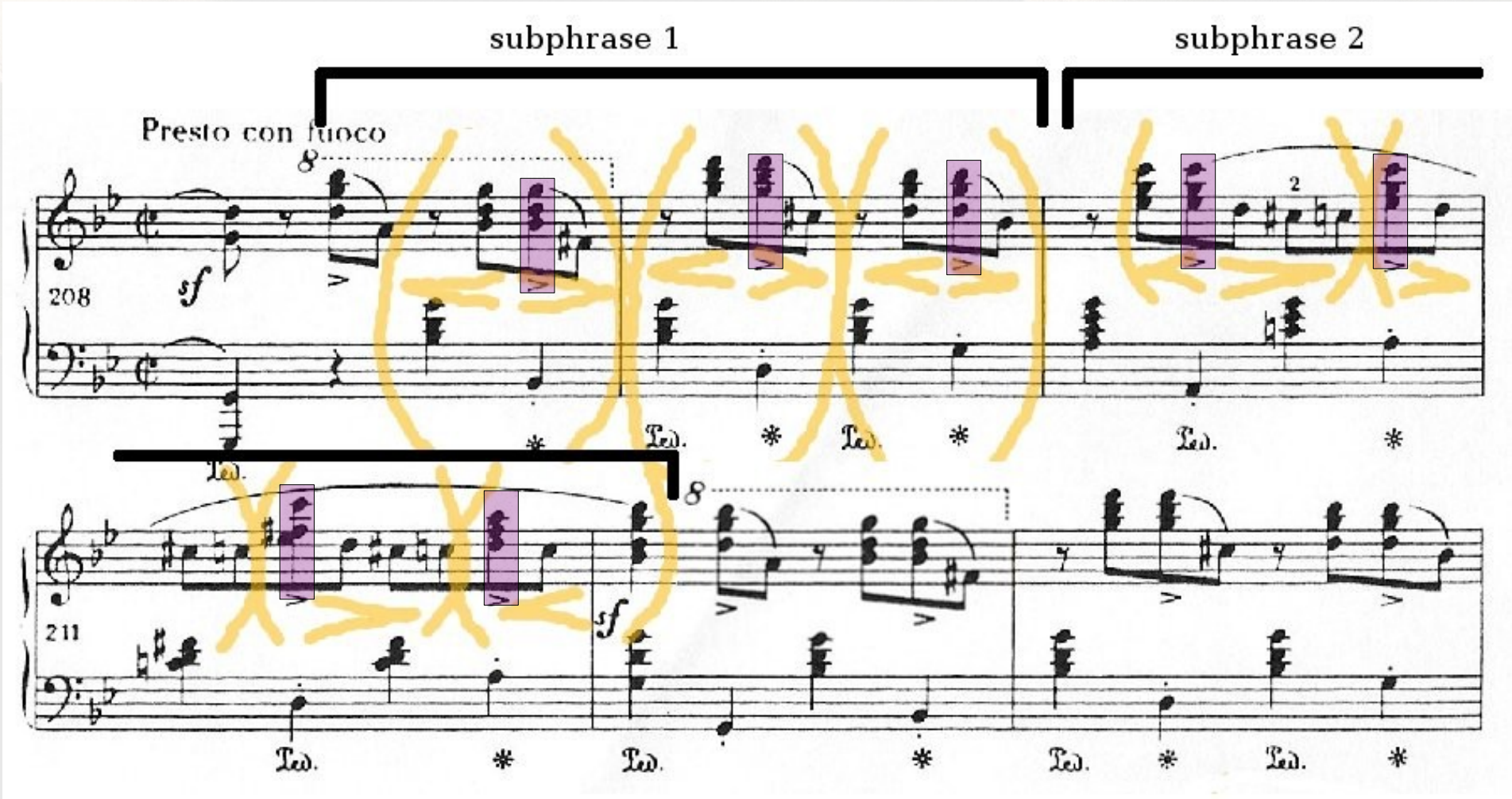
play piece well

raise students' awareness of the score, sound, physical motions

find appropriate techniques for learning the piece

Strong Method: Groupings

the [dynamic] shaping leads to the [physical] feeling SH



Strong Method: Choreography

hands move in opposite directions

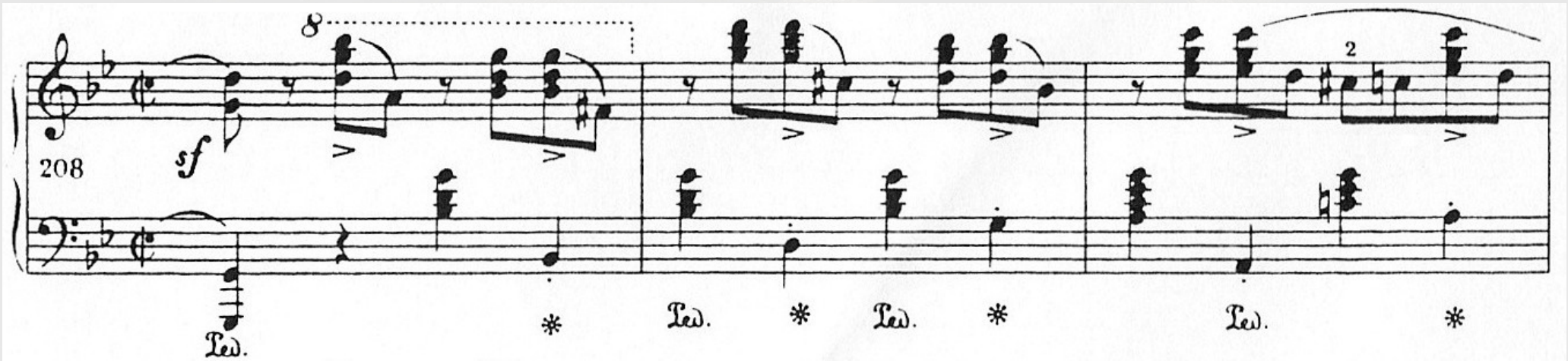
create larger, graceful patterns ST

coordinate hands, left hand circles “under” piano

grab chords with fingers LC

hands move in opposite directions, rhythms

get out of the key RM

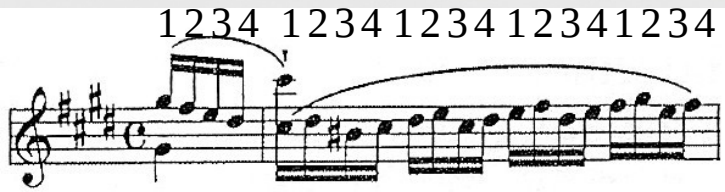


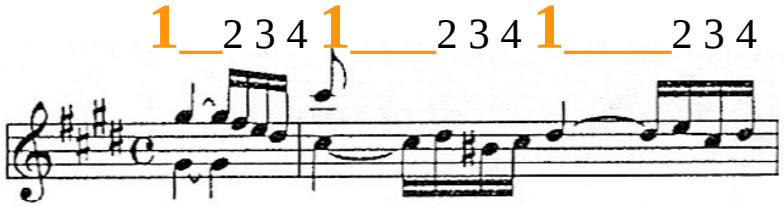
Strong Method: Varied Rhythms

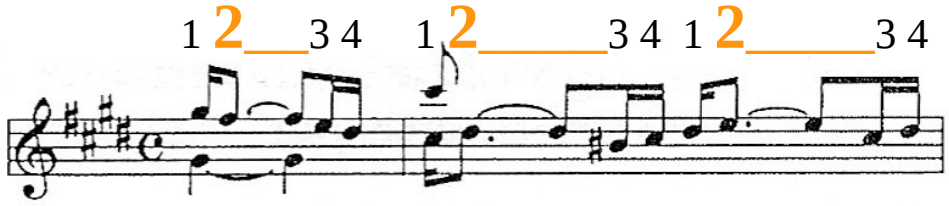
freedom is only measured against a standard

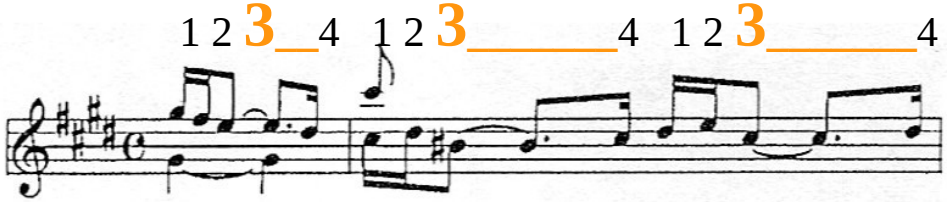
WL

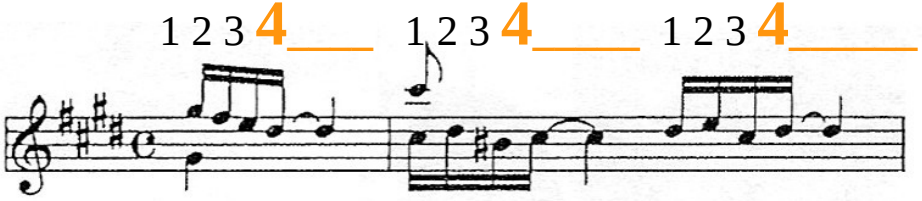
Chopin Etude,
Op. 10, No. 4
(right hand only)











Weak Methods: Means-End Analysis

1. Identify difference between goal state and current state

2. Find operator, constraints to remove or reduce difference

3. Apply operator; if operator cannot be directly applied, define subgoal to remove obstacle

4. repeat above steps until goal is achieved

Novick and Bassock 2005

Weak Methods: Means-End Analysis

1. Identify difference between goal state and current state

   playing not fresh or true to self, lack of own ideas, imitating recordings

2. Find operator, constraints to remove or reduce difference

   develop own ideas from score

3. Apply operator; if operator cannot be directly applied, define subgoal to remove obstacle

   subgoals: raise student's awareness of details in score, sound, and physical motions

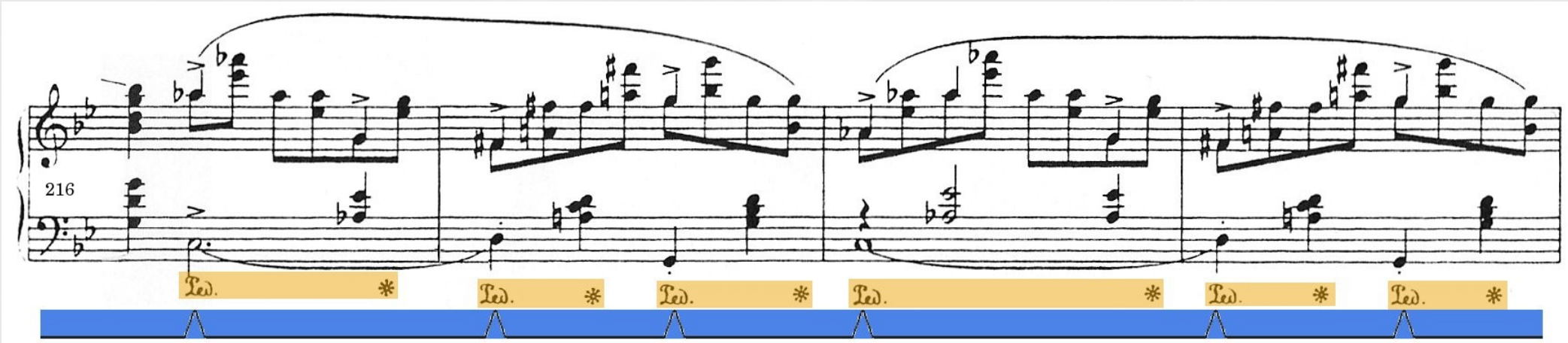
4. repeat above steps until goal is achieved

Novick and Bassock 2005

Weak Method: Reduce Problem Space

subgoal — raise awareness of details in score

add constraints — play only written notes and rhythms
account for expressive markings
respond to pedal indications
make conscious decisions
recognize harmonic progressions



Weak Method: Planning

subgoal raise awareness of sound

generate simplified abstraction

solve problem in abstraction

apply solution to original context

Weak Method: Planning

subgoal raise awareness of sound

generate simplified abstraction

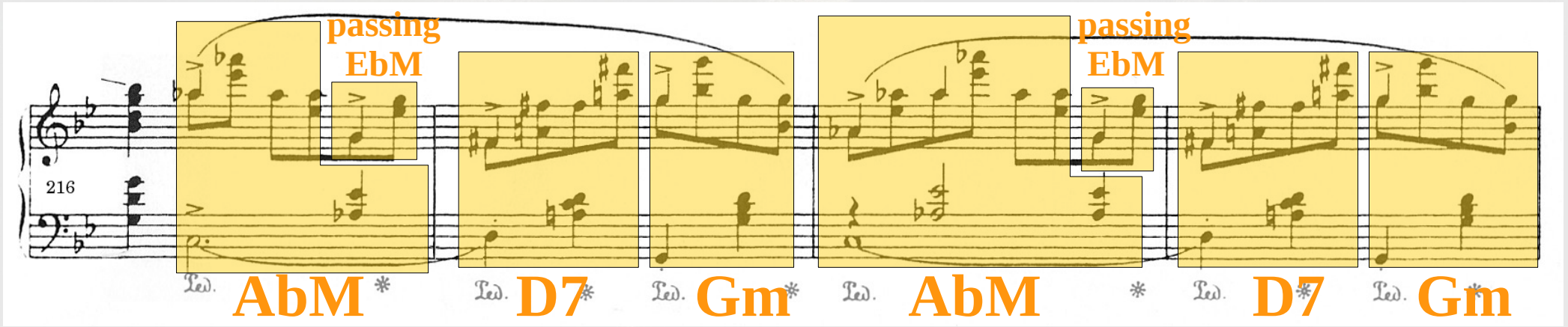
play phrase in blocked chords

solve problem in abstraction

play chords like a nocturne, find phrase shape

apply solution to original context

keep phrase shape when playing all notes HG



Weak Method: Means-End Analysis

subgoal
add constraint

raise awareness of physical motions
maximum ease, efficiency, comfort

set subgoal
add constraint

play each phrase adequately
work with student's problems

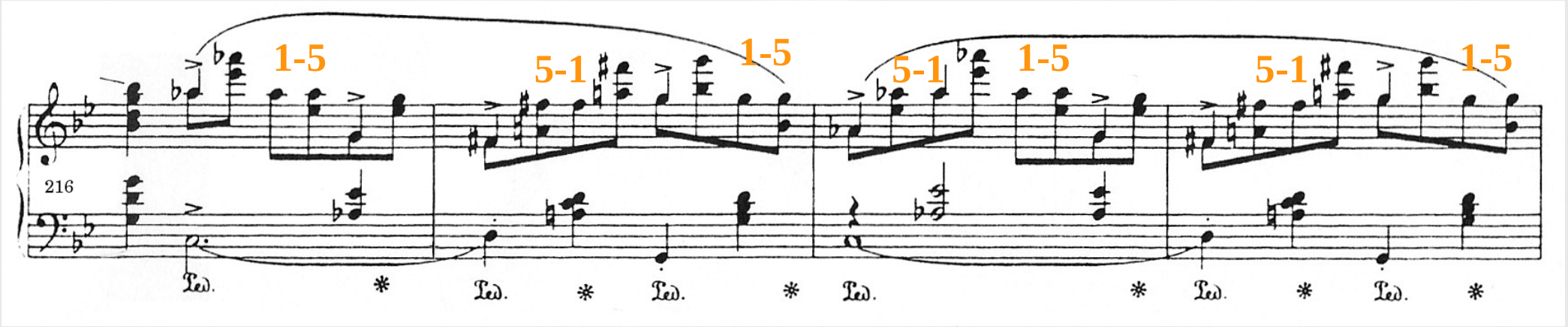
set subgoal
add constraint

play with flow and accuracy
use arpeggio technique

set subgoal
add constraint

choose one technique
apply Feldenkrais principle

GR



Heuristic Methods for mm. 216-219

Reduce Problem Space

subgoal — raise awareness of score

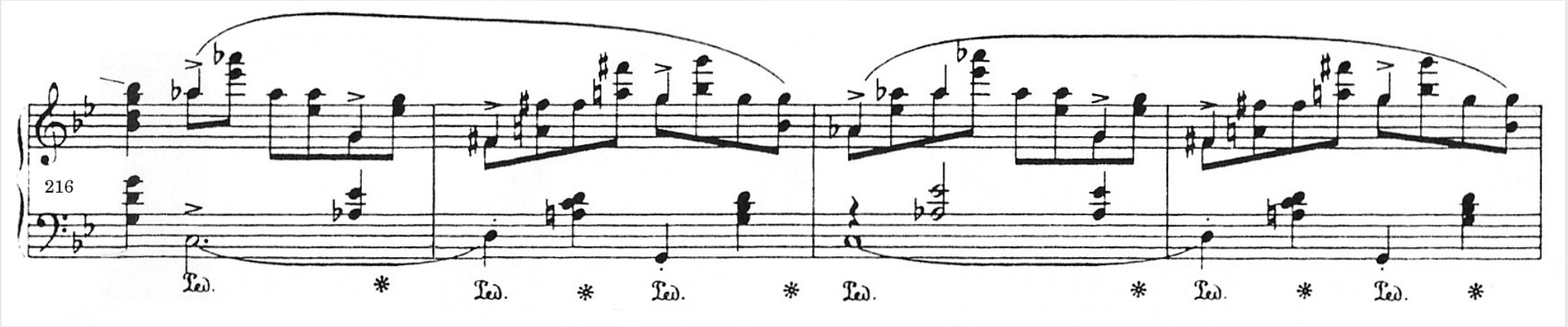
interpret accents, pedaling

Planning

subgoal — raise awareness of sound

play blocked chords for phrasing

Means-End Analysis

subgoal — raise awareness of physical motions

use arpeggio technique