

Four Pieces with Cognitive Constraints

I. Stillness

For Solo Piano

(2021)

Kenrick Ho

Preface

The set of *Four Pieces with Cognitive Constraints* are inspired by Fred Lerdahl's work in music cognition. All four compositions were generated by a Max patch that was specifically designed to satisfy the 17 constraints from Lerdahl's essay titled *Cognitive Constraints on Compositional systems*. These constraints provide the basis for constructing a highly organised hierarchical structure for the Max patch to work with. The set of works explore how Lerdahl's idea of a 'musical' grammar' can be coded into a music generation program.

Performance Notes

The notation uses exclusively unstemmed noteheads. The duration of notated pitches should be roughly reflected by the spatial distance between noteheads. At the end of every system, there is a fermata on the last chord to indicate a gently held chord at the end of each phrase. This is to convey a sense of phrases finishing, though the precise duration is completely up to the performer to interpret, in reaction to the harmonic material. This is followed by a comma at the end of each system to indicate a separation between phrases. The precise duration of commas is again up to the performer, though each comma should last no shorter than 3 seconds. The sustain pedal should be depressed throughout each phrase and continue to be held during the pauses. The performer should attempt to bring out some sense of voice leading with the pitches, but how the notes are connected is free to be interpreted by the player.

ca. 10'00"

Four Pieces with Cognitive Constraints

3

I. Stillness

For Solo Piano

Andante ♩ = ca. 72

Kenrick Ho

Depress sustain pedal throughout each phrase until the end of comma

P rubato

A

The musical score is written for piano and consists of eight systems of two staves each. The notation includes various chords, single notes, and rests, with some notes beamed together. The key signature changes from one flat to two flats between systems 4 and 5. Section C begins with a box labeled 'C' above the first staff of the system.

Section B

Section C

First system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

D

Second system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

Third system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

Fourth system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

Fifth system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

E

Sixth system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

Seventh system of a piano score. The treble clef staff contains a series of chords and single notes, including a half note B-flat and a half note D. The bass clef staff contains a series of chords, including a half note D and a half note F. The system ends with a half note D in the treble and a half note F in the bass, both with a fermata.

The image displays a page of musical notation, likely for piano, consisting of eight systems of staves. Each system typically contains a treble staff and a bass staff, with notes, rests, and accidentals. The notation is written in a standard musical notation style. A box labeled 'F' is positioned above the third system, and a box labeled 'G' is positioned above the seventh system. The page number '6' is located in the top left corner.

First system of musical notation, featuring a treble and bass staff with various notes and rests.

Second system of musical notation, featuring a treble and bass staff with various notes and rests.

H

Third system of musical notation, featuring a treble and bass staff with various notes and rests.

Fourth system of musical notation, featuring a treble and bass staff with various notes and rests.

Fifth system of musical notation, featuring a treble and bass staff with various notes and rests.

Sixth system of musical notation, featuring a treble and bass staff with various notes and rests.

I

Seventh system of musical notation, featuring a treble and bass staff with various notes and rests.

Eighth system of musical notation, featuring a treble and bass staff with various notes and rests.

A musical score for the song 'The Rose Tree'. It features a treble and bass staff. The treble staff has a key signature of one flat (B-flat) and a common time signature (C). The melody is written in a simple, folk-like style. The bass staff provides a simple accompaniment. The score is written in a standard musical notation with a grand staff bracket on the left.

The image shows the first eight measures of the musical score for 'J' by J. S. Bach, BWV 1006. The score is written for a single melodic line on a five-line staff. The key signature is one flat (B-flat), and the time signature is common time (C). The melody begins with a quarter note G4, followed by a quarter note F#4, and then a quarter note E4. The next measure contains a quarter note D4, a quarter note C4, and a quarter note B3. The fifth measure contains a quarter note A3, a quarter note G3, and a quarter note F#3. The sixth measure contains a quarter note E3, a quarter note D3, and a quarter note C3. The seventh measure contains a quarter note B2, a quarter note A2, and a quarter note G2. The eighth measure contains a quarter note F#2, a quarter note E2, and a quarter note D2. The score is labeled 'J' in a box at the top left.

A musical score for the song 'The Rose Tree'. It features a piano introduction in G major, 3/4 time. The score is written for voice and piano. The piano part begins with a series of chords: G4, A4, B4, C5, D5, E5, F#5, G5, A5, B5, C6, D6, E6, F#6, G6, A6, B6, C7, D7, E7, F#7, G7, A7, B7, C8, D8, E8, F#8, G8, A8, B8, C9, D9, E9, F#9, G9, A9, B9, C10, D10, E10, F#10, G10, A10, B10, C11, D11, E11, F#11, G11, A11, B11, C12, D12, E12, F#12, G12, A12, B12, C13, D13, E13, F#13, G13, A13, B13, C14, D14, E14, F#14, G14, A14, B14, C15, D15, E15, F#15, G15, A15, B15, C16, D16, E16, F#16, G16, A16, B16, C17, D17, E17, F#17, G17, A17, B17, C18, D18, E18, F#18, G18, A18, B18, C19, D19, E19, F#19, G19, A19, B19, C20, D20, E20, F#20, G20, A20, B20, C21, D21, E21, F#21, G21, A21, B21, C22, D22, E22, F#22, G22, A22, B22, C23, D23, E23, F#23, G23, A23, B23, C24, D24, E24, F#24, G24, A24, B24, C25, D25, E25, F#25, G25, A25, B25, C26, D26, E26, F#26, G26, A26, B26, C27, D27, E27, F#27, G27, A27, B27, C28, D28, E28, F#28, G28, A28, B28, C29, D29, E29, F#29, G29, A29, B29, C30, D30, E30, F#30, G30, A30, B30, C31, D31, E31, F#31, G31, A31, B31, C32, D32, E32, F#32, G32, A32, B32, C33, D33, E33, F#33, G33, A33, B33, C34, D34, E34, F#34, G34, A34, B34, C35, D35, E35, F#35, G35, A35, B35, C36, D36, E36, F#36, G36, A36, B36, C37, D37, E37, F#37, G37, A37, B37, C38, D38, E38, F#38, G38, A38, B38, C39, D39, E39, F#39, G39, A39, B39, C40, D40, E40, F#40, G40, A40, B40, C41, D41, E41, F#41, G41, A41, B41, C42, D42, E42, F#42, G42, A42, B42, C43, D43, E43, F#43, G43, A43, B43, C44, D44, E44, F#44, G44, A44, B44, C45, D45, E45, F#45, G45, A45, B45, C46, D46, E46, F#46, G46, A46, B46, C47, D47, E47, F#47, G47, A47, B47, C48, D48, E48, F#48, G48, A48, B48, C49, D49, E49, F#49, G49, A49, B49, C50, D50, E50, F#50, G50, A50, B50, C51, D51, E51, F#51, G51, A51, B51, C52, D52, E52, F#52, G52, A52, B52, C53, D53, E53, F#53, G53, A53, B53, C54, D54, E54, F#54, G54, A54, B54, C55, D55, E55, F#55, G55, A55, B55, C56, D56, E56, F#56, G56, A56, B56, C57, D57, E57, F#57, G57, A57, B57, C58, D58, E58, F#58, G58, A58, B58, C59, D59, E59, F#59, G59, A59, B59, C60, D60, E60, F#60, G60, A60, B60, C61, D61, E61, F#61, G61, A61, B61, C62, D62, E62, F#62, G62, A62, B62, C63, D63, E63, F#63, G63, A63, B63, C64, D64, E64, F#64, G64, A64, B64, C65, D65, E65, F#65, G65, A65, B65, C66, D66, E66, F#66, G66, A66, B66, C67, D67, E67, F#67, G67, A67, B67, C68, D68, E68, F#68, G68, A68, B68, C69, D69, E69, F#69, G69, A69, B69, C70, D70, E70, F#70, G70, A70, B70, C71, D71, E71, F#71, G71, A71, B71, C72, D72, E72, F#72, G72, A72, B72, C73, D73, E73, F#73, G73, A73, B73, C74, D74, E74, F#74, G74, A74, B74, C75, D75, E75, F#75, G75, A75, B75, C76, D76, E76, F#76, G76, A76, B76, C77, D77, E77, F#77, G77, A77, B77, C78, D78, E78, F#78, G78, A78, B78, C79, D79, E79, F#79, G79, A79, B79, C80, D80, E80, F#80, G80, A80, B80, C81, D81, E81, F#81, G81, A81, B81, C82, D82, E82, F#82, G82, A82, B82, C83, D83, E83, F#83, G83, A83, B83, C84, D84, E84, F#84, G84, A84, B84, C85, D85, E85, F#85, G85, A85, B85, C86, D86, E86, F#86, G86, A86, B86, C87, D87, E87, F#87, G87, A87, B87, C88, D88, E88, F#88, G88, A88, B88, C89, D89, E89, F#89, G89, A89, B89, C90, D90, E90, F#90, G90, A90, B90, C91, D91, E91, F#91, G91, A91, B91, C92, D92, E92, F#92, G92, A92, B92, C93, D93, E93, F#93, G93, A93, B93, C94, D94, E94, F#94, G94, A94, B94, C95, D95, E95, F#95, G95, A95, B95, C96, D96, E96, F#96, G96, A96, B96, C97, D97, E97, F#97, G97, A97, B97, C98, D98, E98, F#98, G98, A98, B98, C99, D99, E99, F#99, G99, A99, B99, C100, D100, E100, F#100, G100, A100, B100, C101, D101, E101, F#101, G101, A101, B101, C102, D102, E102, F#102, G102, A102, B102, C103, D103, E103, F#103, G103, A103, B103, C104, D104, E104, F#104, G104, A104, B104, C105, D105, E105, F#105, G105, A105, B105, C106, D106, E106, F#106, G106, A106, B106, C107, D107, E107, F#107, G107, A107, B107, C108, D108, E108, F#108, G108, A108, B108, C109, D109, E109, F#109, G109, A109, B109, C110, D110, E110, F#110, G110, A110, B110, C111, D111, E111, F#111, G111, A111, B111, C112, D112, E112, F#112, G112, A112, B112, C113, D113, E113, F#113, G113, A113, B113, C114, D114, E114, F#114, G114, A114, B114, C115, D115, E115, F#115, G115, A115, B115, C116, D116, E116, F#116, G116, A116, B116, C117, D117, E117, F#117, G117, A117, B117, C118, D118, E118, F#118, G118, A118, B118, C119, D119, E119, F#119, G119, A119, B119, C120, D120, E120, F#120, G120, A120, B120, C121, D121, E121, F#121, G121, A121, B121, C122, D122, E122, F#122, G122, A122, B122, C123, D123, E123, F#123, G123, A123, B123, C124, D124, E124, F#124, G124, A124, B124, C125, D125, E125, F#125, G125, A125, B125, C126, D126, E126, F#126, G126, A126, B126, C127, D127, E127, F#127, G127, A127, B127, C128, D128, E128, F#128, G128, A128, B128, C129, D129, E129, F#129, G129, A129, B129, C130, D130, E130, F#130, G130, A130, B130, C131, D131, E131, F#131, G131, A131, B131, C132, D132, E132, F#132, G132, A132, B132, C133, D133, E133, F#133, G133, A133, B133, C134, D134, E134, F#134, G134, A134, B134, C135, D135, E135, F#135, G135, A135, B135, C136, D136, E13

A musical score for the song "The Rose Tree". The score is written for a piano, with a treble and bass staff. The key signature is one flat (B-flat), and the time signature is 4/4. The melody is in the treble staff, and the accompaniment is in the bass staff. The melody consists of a series of eighth and quarter notes, with a final half note. The accompaniment consists of a steady eighth-note pattern in the left hand and a series of chords in the right hand. The score is written in a simple, clear style, with a large, bold font for the notes and a smaller font for the lyrics.

A musical score for the song 'The Rose Tree'. The score is written for a piano, with a treble and bass staff. The key signature is one flat (B-flat), and the time signature is 4/4. The melody is in the treble staff, and the accompaniment is in the bass staff. The melody consists of a series of eighth and quarter notes, with a final half note. The accompaniment consists of a steady eighth-note pattern in the left hand, with occasional chords in the right hand. The score ends with a double bar line.