ON THE TRANSVERGENCE OF ART AND IDEA: A CALL TO COMPOSE THE POSSIBILITY OF NO MUSIC.

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ABSTRACT

Using the recent case of mistaken identity (of art for trash) at the Museion Bolzano as a starting point, this paper explores an alternative interpretation of the incident as a foundation for thinking beyond the aesthetics of postmodernism. From a music composition perspective, the author acknowledges the end-game of Cagean silence but, nevertheless, finds in the work of both Duchamp and Cage new and relatively unexplored possibilities for composition. The author proposes a model of situated, generative music that is ultimately devoid of musical necessity. To this end, the development and implementation of the ConvergentArray algorithm in the production of such generative work is discussed as a means to modulate aural appearances. The algorithm is discussed in detail and presented as one tool, which, when leveraged in conjunction with a particular 'context of deployment', extends compositional possibilities in the direction of non-essentialist and singular musical determination.

I. The Museion Bolzano Incident

We are no longer thinking hard enough about the relationship between art and life. The recent 'clean-up' job at the Bolzano Museion[1] and our all too predictable reactions to the incident—both that contemporary art must actually be trash, or, that being trashed necessarily proves contemporary art to be challenging and subversive—reveal the scope of the problem, the scope of our limited thinking. The cleaning crew was told to clean up trash (including empty wine bottles) from a gallery event. They ended up removing an art installation designed to reflect the indulgence and consumption of the 1980s, composed of empty champagne bottles, cigarette butts, confetti, and discarded shoes and clothing, titled "Where shall we go dancing tonight?". I am both laughing and deeply interested. But then the host institution managed to salvage the artwork's materials, re-install the work using photos of the original, and actively highlight (while apologizing for) the case of mistaken identity through press quotes and social media. Now I am confused. I intuit a truth that those engaged with contemporary art and music continue to back away from.[2]

To begin to think through this confusion and reveal the perspectival truth I intuit, let us first outline a sequence of events regarding the above incident: artists Sara Goldschmied and Eleonora Chiari collected materials to actualize the

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[1] Johnathan Jones. "Modern Art is Rubish? Why mistaking artworks for trash proves their worth." *The Gaurdian*, accessed November 1, 2015. http://www.theguardian.com/global/shortcuts/2015/oct/27/modern-art-is-rubbish-why-mistaking-artworks-for-trash-proves-their-worth?CMP=share_btn_tw

[2] A similar incident happened with a work by Damian Hirst in 2001. However, rather than taking it as seriously as those involved in the more recent incident have, Hirst was quoted as saying: "Fantastic. Very Funny." Colin Blackstock, "Cleaner clears up Hirst's ashtray art," *The Gaurdian,* accessed November 1, 2015, http://www.theguardian.com/uk/2001/oct/19/arts.highereducation1

idea of trash leftover from a party in the ‘80s; with the help of the Museion, they contextualized the materials as Art (ostensibly to reflect/constitute/promote some ideological distance from ‘80s-style consumerism); a cleaning crew mistakenly identified their work as trash; the Museion recovered the materials and re-presented the work as Art in an attempt to definitively reassert that it is, in fact, not trash; and now, the institution is leveraging the affair as a promotional vehicle under the guise of sustaining a public ‘dialog’ on contemporary art. Across these events (and at the risk of perpetuating what I consider to be a wholly farcical dialog), I cannot help but glean the discourse of a larger narrative— namely, our post-modern ‘clean-up’ of the modernist event, whereby any contemporary shock occurs not over what things one places in the gallery (what constitutes art), but rather, in questioning or undermining the juridicial equality of any-Thing’s inclusion (art constituted of anything).

II. The Larger Imperative

After Duchamp’s readymades and then Cage’s silence, we still seem incapable of thinking past the provocation turned aesthetic end-game of Art as life. Any of our subsequent attempts to undermine the aestheticized frame enframing life have only further highlighted the priority of the frame over its content. But in mistaking the Art of “Where shall we go dancing tonight?” for trash, the Museion cleaning crew plays the ‘part of no-part’ in a much larger drama between art and life, and in that role, I identify a kernel of hope.

Urinating into Duchamp’s *Fountain* is not a case of mistaken identity, but rather, a next-wave provocation undertaken with full-acknowledgement that the readymade's "transgressive excess [lost] its shock value and is fully integrated into the established art market."[3] Such an action only reinforces the epistemological foundations upon which the aestheticization of Duchamp's attempt to "discourage aesthetics" are built, namely the pursuit of distinction or recuperation from marginalization. In contrast, the possibility of mistaken identity or misattribution lurking at the intersection of Art and trash (or Music and noise) is at once innocent and insurmountable, resisting any attempt at universalization in one direction or the other. Ontological determination is, at a base level, entirely contingent— no degree of consensus formation mitigates against the thing becoming something else entirely. Thus, while attempts to undermine consensus can be read as simple attempts to give voice to the marginalized (perspectives, people, etc.), if we subtract any and all 'attempts', if the artist truly disappears from the work and leaves nothing but the possibility of perceptual difference as difference, then any case of mistaken identity is devoid of mistake; it is constitutive, regardless of the direction in which identity is resolved.

Accordingly, we should say that Goldschmied's and Chiari's *mistake* lies in their attempt to prevent a re-presentation of '80s trash from, in fact, being trash— from preventing the cleaning crew from cleaning it up. In response to the event, the artists were quoted as saying, "What happened was bad. It cannot be possible for an installation to end up in the rubbish bin."[4] On the contrary, for Art

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[3] Slavoj Žižek, *Less Than Nothing: Hegel and the Shadow of Dialectical Materialism* (London: Verso, 2012), 256.

[4] As quoted in, "Modern Art Exhibit Mistaken for Trash and Thrown Away." *New York Post Online,* accessed November 1, 2015, http://nypost.com/2015/10/27/modern-art-exhibit-mistaken-for-trash-and-thrown-away/

to continue to advance in its relation to life, such a possibility must be foundational.

III. A Composer's Response

In my view as an electroacoustic composer, sound, technology, and site, when placed in thoughtful relation, can (and should) be leveraged to advance the practice of composition devoid of any musical necessity. The absence of musical necessity can also be stated as the possibility that no music occurs, and thusly, for the composer to manipulate sound potentially toward the composition of nothing. If this sounds self-defeating or self-undermining… it is. Through the artist's own subtraction of any personal intentions focused on the refinement of musical essence, a Barthesian-like death (suicide?) of authorship enables composition itself to be set free— reinvigorating the practice with new possibilities for both technical advancement and, ultimately, aural experience. As a composer who accepts the possibility that my work is (or may become) trash, I have one simple tool and a generalized context of presentation to share and to encourage others to consider.

A Dice-Game

In 2010 I devised and began using a particular dice-game, one that marks the apparent change of sounds through time as never wholly determined (consistent), nor completely indeterminate (random/chaotic). To achieve this behavior I sought to *deterministically change the die that we use to indeterminately change the appearance of sound*. This might seem absurdly simple, but it is an entirely sufficient means to modulate the outward appearance of what the sounds are across time in a manner that yields a wide (though not un-totalizable) set of possibilities. To generate a wide range of possibilities is desirable only insofar as the appearance of sound forces a would-be listener to question what that aural appearance is at any given moment.

Convergence of Set

We can consider the aforementioned dice-game in a theoretical way by maintaining an analogy with a real/physical die. Subsequently, I will describe some details of my own software implementation of this behavior.

Given a particular die, we identify a number of pre-given cases or potentialities corresponding to the faces of the die. When we roll the die a particular case is selected according to an (assumedly) uniform probability of selection, whereby all potential cases have equal chance of being selected. Let us arbitrarily say that we have a six-sided die, so we have six potential cases. Each case is associated with numeric values: 1, 2, 3, 4, 5, and 6, respectively. The proposed game unfolds in the following way:

1. Determine a numeric *step value* (SV) that is equal to 1 divided by some integer that is greater than or equal to 1 (for instance, 1/10 = 0.1).
2. Roll the die to determine a *selected case* (SC).
3. Record the *associated value* (AV) of the SC and store it as the *target value* (TV) for each of the die's potential cases.
4. Roll the die to determine a SC.
5. Apply the AV of the SC determined in step 4 to a parameter of sound generation.
6. Update the AV in one of the following two ways:
    i) if the TV is greater than the AV, then add the SV to the AV.
    ii) if the TV is less than the AV, then subtract the SV from the AV.

7. Change the die so that the numeric result of the previous step will be the new AV for the SC on any future rolls.

8. Go to step 4.

This procedure results in a very specific behavior. The die is initially governed by chance—the equal probability of selecting different cases (which we may refer to orthographically as: one, two, three, four, five and six). Each case is associated with different integer values (which we may define numerically as 1, 2, 3, 4, 5, and 6, respectively). However, after successive rolls, the value associated with each case progresses toward a consistent value outcome, the product of our first roll or the *target value* (TV). The more we play the game, the more the values converge toward the TV—until finally all associated values (AVs) are the same; the associated value equals the TV for all cases. To provide an example using the aforementioned die, lets say we roll the die and select five. We then set 5 as our TV. We then roll again and select six and then apply 6 to some parameter controlling sound generation. We then update 6 by *subtracting* (following step 6-ii) 0.1 from 6, which gives us 5.9. We then change the die so that the die's sixth face (case six) has an associated value of 5.9. As we continue to roll, we select cases at random (by chance) and in each instance update the values associated with the selected case and then change the die accordingly. Eventually, cases one through six all have an associated value of 5. At this point, any die-roll will yield a consistent outcome even though that very outcome was itself determined by chance. See Figure 1 for a graphical representation of value outcomes determined by 250 iterations of this exact dice-game.

If we stop here, our game is over (or it otherwise goes on for an infinite amount of time yielding the same result: 5). However, once we have *converged* we may then invert the process described in step 6 (adding or subtracting the *step value* to/from the target value), and begin to *diverge* back towards the original values. Accordingly, rather than updating the selected case's value as a means of approaching consistency, we update it in the other direction and approach randomness. See Figure 2 for a graphical representation of divergence within the bounds of the dice-game described in the preceding paragraph.

ConvergentArray: an implementation of set convergence in software

In software, the game is played using data structures rather than dice; an array of indexed values may function as a die. Our array constitutes a pre-given set of differentiated values—a set being a finite configuration of potentialities subject to probabilistic logic. To roll our die in software, we randomly select a value at a given *index*, which will replace the term *case* for the remainder of this paper.

In the SuperCollider[5] programming environment, I implemented a Class Extension called "ConvergentArray" that functions like the die described above, with a few notable modifications/extensions, outlined below.

Statistical Feedback Modification: The ConvergentArray object implements a statistical feedback model governing the selection of any given index in order to ensure the appearance of randomness. This model is a direct

[5] SuperCollider is an audio programming environment developed by James McCartney. The software is open source and available online at the following address:http://supercollider.sourceforge.net/

implementation of the dissonant counterpoint algorithm described by Larry Polansky, Alex Barnett, and Michael Winter in 2010.[6] True randomness, even computational pseudo-randomness, is notoriously bumpy. For our purposes, the appearance of randomness is the priority, so I have taken pains to smooth it out: the outcomes of previous selections (history) are taken into account such that more recently selected indices are less likely to be selected and less recently selected indices are more likely to be selected. Statistical feedback biases the algorithm toward the exhaustion of the set of indices, if not series and pattern, depending on how the biasing is biased (how previously selected indices increase in their probability of selection across successive rolls).

Growth Function Modification: I further extended control over the rate and shape of convergence. The rate of convergence concerns the number of iterations (die-rolls) until all *associated values* equal the *target value*. The rate of convergence is controlled by a numerical argument that we may call the *number of steps.* The number of steps is a constant passed to each instance of ConvergentArray upon instantiation[7] that determines how many incremental additions or subtractions (steps) must occur for each initial associated value to reach the target value; fewer steps makes for faster, more abrupt convergence.

The number of steps is a critical value for computing not just the rate of convergence, but also the shape of convergence. The shape of convergence concerns the adjustability of the increment or *step value* added to, or subtracted

[6] see Larry Polansky, et al., "A Few More Words About James Tenney: Dissonant Counterpoint and Statistical Feedback," *Journal of Mathematics and Music* 5, no. 3 (2011).

[7] Instantiation refers to the creation of an instance of a pre-defined class or object. Here, the term signifies the creation of an instance of the ConvergentArray class.

from, the value at a given index (associated value). To refer back to our dice-game analogy, we should consider step 1 in greater detail. In step 1 we calculated a step value of 0.1 in the following way: we divided 1 (which is the smallest difference between any two values in the set of all associated values) by some integer greater than or equal to 1, for which we arbitrarily chose 10. In fact, 10 served as an arbitrary value for the number of steps to reach the target value. We may, therefore, formalize our calculation in step 1 by providing the following generalized equation for the step value (v_s):

$$v_s = \frac{1}{N}$$

where N is a constant representing the total number of steps to reach a target value that is ±1 from the initial associated value of a given index.

In step 6 of our dice game analogy, where we update the associated value of the selected index in the direction of the target value, v_s does not change; only its sign changes (as a matter of addition or subtraction) relative to the target value. We may, therefore, consider the above equation as a parameter of the *growth function* that specifies how all associated values are to be updated. The growth function described by our dice-game analogy can be written in the following way:

$$f(x_i) = n_i \times \frac{1}{N} \times \left(\frac{T - x_i}{|T - x_i|}\right) + x_i$$

where x_i is the initial associated value of index i, T is a constant representing the target value, and n_i is the number of times index i has been selected where $0 \leq n_i \leq N(|T - x_i|)$. Essentially, we multiply the v_s by the number of times the given index has been selected (n_i). This product (either positive or negative, depending on whether T is greater than or less than x_i) is added to the value at index i (x_i). The growth function may be simplified thusly:

$$f(x_i) = \frac{n_i(T - x_i)}{N(|T - x_i|)} + x_i$$

We should notice here how the constant N does not ensure that the target value is reached in N number of steps for all associated values (x_i). In fact, N is only the actual number of steps when $T - x_i$ = -1, 1. If T = 5 and x_i = 3, then index i would need to be selected 20 times for x_i to reach T if we maintain that N = 10. To exert more control over the rate of convergence for the set of *all* associated values, we must change the growth function such that x_i for all i converge to T in N number of steps.

In my implementation, the growth function is changed accordingly; v_s varies proportionally with the difference between T and x_i, such that the number of times that i must be selected (n_i) for any associated value (x_i) to reach the target value (T) equals N for all i. In other words, any given index will have converged once n_i equals N. Accordingly, n_i, while necessarily greater than 0, is now bound on the upper end by N. This new growth function, the one that I have implemented in SuperCollider, looks like this:

$$f(x_i) = \frac{{n_i}^{\alpha}(T - x_i)}{N^{\alpha}} + x_i$$

where N is any integer, T is any rational number, and n_i is any integer between 0 and N inclusive. This function ensures that N establishes a universal rate of convergence, which we may define at the outset. The shape of convergence is described by the curvature of the growth function; $f(x_i)$ approaches T at a rate that is inflected by an exponential factor (α). A linear path towards convergence is defined by a power of 1 ($\alpha = 1$), while some power greater than 1 defines an exponential path, and a power that is a fraction of 1 defines a logarithmic path. See Figures 3, 4, and 5 for graphs depicting outcome values generated using ConvergentArray with an exponential factor (α) of 1, 2, and 0.5, respectively. An array of integer values 1, 2, 3, 4, 5, 6 was used in order to provide a basis for growth function comparison with the preceding graphical representations of the dice-game analogy. All graphs converge to the value 5. This value was set artificially in order to further facilitate comparison.

Additional Modifications: It is also important to note that the ConvergentArray algorithm operates upon sets of rational numbers. Furthermore, decimals may be rounded upon output from the growth function according to a user-specified *quantization level* that is defined upon instantiation. In this way, computation proceeds with full decimal precision while allowing the user to determine if the resultant values need to be more or less exact.

All of the features implemented in the CovergentArray SuperCollider class also function in reverse, as a means to diverge the given value set. By simply counting backwards (from N to 0) the number of times a particular index is selected (n_i), a converged value set can be shown to diverge by using the same growth function. Accordingly, an infinite number of iterations (of converging and then diverging) may ensue, and an infinite number of computational modifications may be brought to bear on the parameters governing such behavior. Figure 6 provides a graph of a divergent trajectory and may be considered an inversion of the convergent trajectory shown in Figure 3.

Based on the behavior of the algorithm and the modifications discussed here, our ability to control a variety of parameters raise many questions about 'how', 'when', and 'within what bounds' we move to mathematically converge and diverge value sets. It is through our consideration of how the growth function changes values applied to sound synthesis that we encounter a multidimensional territory of possible change.

Using ConvergentArray to control sound synthesis parameters

Once implemented, ConvergentArray is primed to modulate the parameters of sound synthesis in a way that is neither completely predictable, nor wholly chaotic. The way that I have sought to implement such functionality is to instantiate a new array for each defined parameter governing sound synthesis. Take for example the generation of a simple sine-tone. Immediately we may want to control the sine-tone's frequency and its amplitude. My response to this situation is to instantiate two ConvergentArrays; one governs the frequency of the sine-tone, the other the amplitude. Each parameter is thereby left to converge and diverge according to its own set of values, number of steps, and growth function exponent. Furthermore, each ConvergentArray may be updated with a new set of values independently. (This is usually best to do at a point of full convergence or full divergence.)

If we imagine a sample-based instrument or instruments with dozens of parameters, with each parameter being modulated according to a ConvergentArray, the set of possible appearances of the resultant sound is vast.

However, if all the ConvergentArrays are operating entirely independently, chaos remains supreme. If only the ConvergentArray governing a sound's amplitude remains consistent, while twenty other parameters vary indeterminately, the notion of consistency is itself perceptually indiscernible. Again, our goal is not merely to present chaotic change, but rather, to modulate the semblance of all sound being generated. So I have found it most effective to ensure that all parameters (or at least a high percentage of them) have converged before allowing them to diverge, and similarly, that they all should diverge before allowing them to converge. We can think of this as a gate in the algorithmically generative system that blocks all ConvergentArrays from proceeding (reversing course) until all parameters have fully realized their tasked trajectory. This ensures against disruptions in the gestalt appearance of sound as a result of ConvergentArrays falling drastically out of phase with each other.

As a result of convergent/divergent processes, aural appearances may shift in seemingly infinite ways—and not just as a matter of indeterminate selection, but rather, as the seemingly miraculous emergence and disappearance of some *telos.* As outcomes veer toward and then away from consistency (i.e. $f(x_i)$ yields T for all i), we are left with nothing but a sense of directionality that is itself wholly unpredictable and that forever seems to be lagging behind what the sounds (numerical values) are at any given moment.

IV. Context of Deployment

When considering how the sounds generated using the ConvergentArray algorithm are placed in the world, I find more traditional terms like 'performance space' limiting. What I aim to briefly address is the (mis)alignment between sounds and where we hear them, which, from a compositional perspective, concerns staging or deploying one's designed patterns of sound in relation to place. Thus to take the functionality of the ConvergentArray algorithm and place it in the world is to consider conditioning the context in which sounds are not necessarily heard as music. In such a context, listener attention (let alone reception) is not guaranteed, and so I will use the term 'context of deployment' to address issues of site.

To deploy music that is not necessarily musical, the focus must shift from clarity of musical signal or intent to the structuring the mere possibility for a *point of musical confrontation* to arise. This 'point' is akin what Alain Badiou has described, in relation to Duchamp's readymades, as the critical point "at which there is a qualitative discontinuity, such that at this same point, there is indecernability between one state and another, which however differ absolutely every place else."[8] In the most basic sense, a shift of perspective must occur in a listener around any given sound's plausible/impossible engagement with site for it to be heard as musical. Under such consideration, concert halls are bad sites. The concert hall is itself the frame overshadowing any ontological determination of sound, necessitating the integration of any sonic appearance into the known configuration of Music. Luckily, the world still has plenty non-concert-hall sites.

This confrontation may, of course, occur at any point along the convergent/divergent trajectories informing the production of sound. However,

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[8] Alain Badiou, "Some Remarks on Marcel Duchamp," *The Symptom,* 9 (June, 2008), accessed on November 1, 2015, http://www.lacan.com/symptom/?p=39.

issues of pitch, volume, causal source, localization, etc. all play a role in how integrated or separate a given sound appears in relation to its context of deployment. And herein lies the job of the composer: to integrate sound into site enough to mitigate the risk of perpetual confrontation, and to separate sound from site enough to provide ample opportunity for a confrontation to arise. In my estimation, Max Neuhaus' *Times Square* is an exemplary piece of work precisely because it strikes such a balance.

V. Compositional Partiality.

The composer is, in all actuality, neither omniscient, nor objective, nor disengaged. The composer is partial, and should stand steadfastly in the corner of the Museion cleaning crew, whose actions reflect a momentarily unmitigated free choice— a choice that only appears naïve in light of the severely limiting context of *a priori* and essentialist aesthetic determinations. By inverting the productive agency of artist and audience, not in the traditional sense of leaving a work "unfinished," but rather, in finishing an *incomplete* work, the composer opens up the possibility for unmitigated freedom of choice to emerge as a singular phenomena that is, nevertheless, universal. The ConvergentArray algorithm is merely one tool to begin realizing this aim. New tools and techniques should be developed and deployed, in thoughtful consideration of sound's relation to site, to further advance the possibilities of music composition by taking the possibility of no music as foundational. As a composer who accepts the possibility that my work is (or may become) trash, I think such tools might help us call all kinds of objects (sonic or otherwise) into question, to mine mistaken-identity to reveal the inherent and unbridled capacity for things to become other (to change with or without reason) across all manner of situations.

In fact, is this not precisely Badiou's point in discussing the 'inaesthetics' of Duchamp?

> Art has to become the trace of its own action. Art must be the place of its taking place. So, the work of art is self-sufficient. We must have art without any artist. Duchamp affirms the impersonality of artistic action. He argues against everything that brings into the becoming of the work the trace of a perceptive passivity.[9]

Perceptual activity is the name of the game, and not the activity of the artist highlighting or defending their own activity. The activity of viewer/listener access should be paramount and free (*really* free, both as a matter of perception and politics) of any *a priori* ontological determination.

[9] Alain Badiou, "Some Remarks on Marcel Duchamp," *The Symptom* 9 (2008), accessed December 1, 2015, http://www.lacan.com/symptom/?p=39.

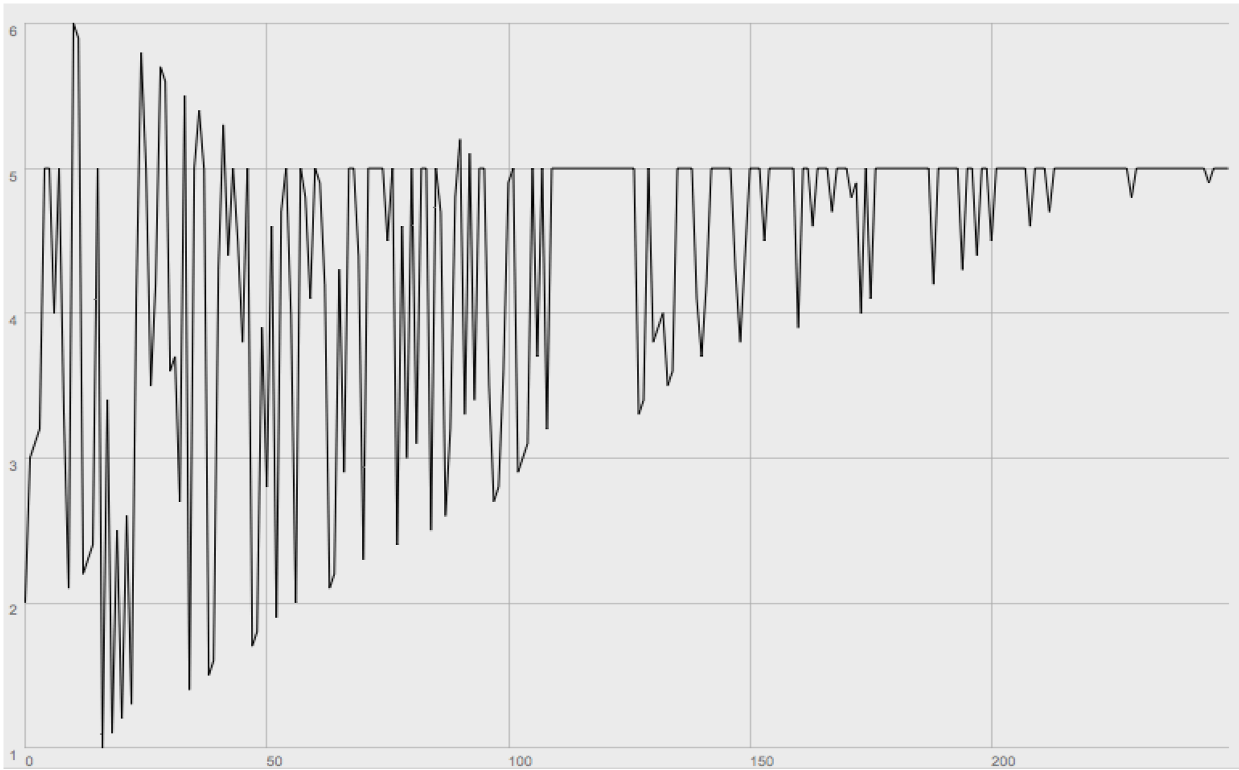

Figure 1. Convergent dice-game: associated value outcomes for 250 dice-rolls.

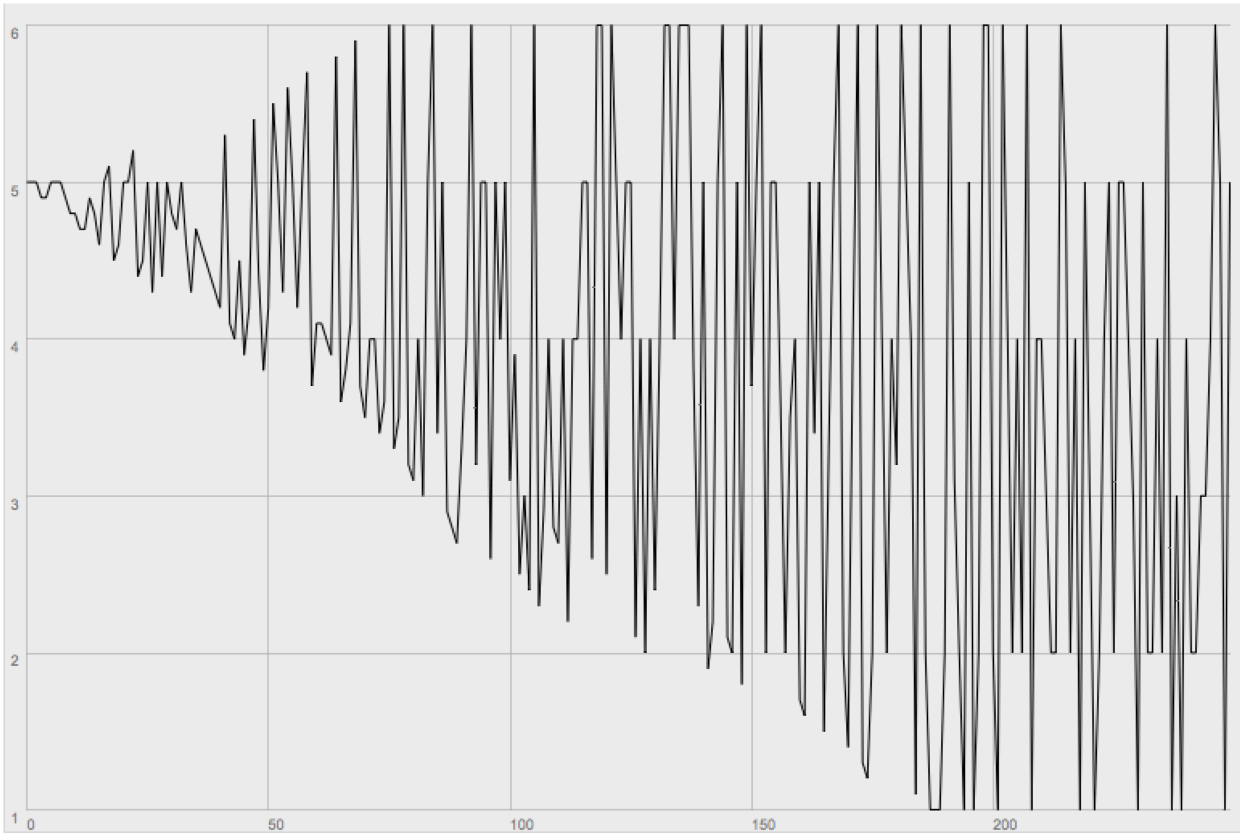

Figure 2. Divergent dice-game: associated value outcomes for 250 die-rolls.

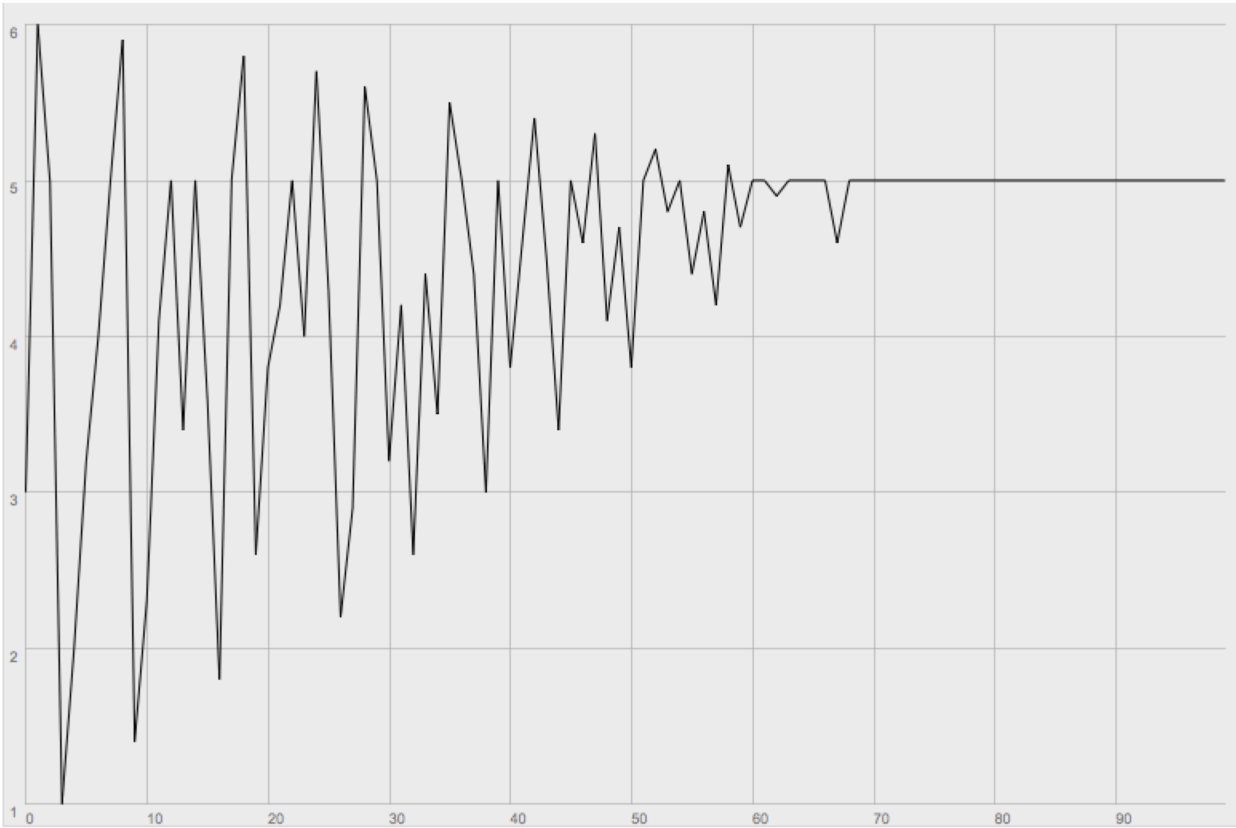

Figure 3. ConvergentArray: values [1, 2, 3, 4, 5, 6] converging across 100 iterations (N = 10, α = 1, quantization level: 0.1).

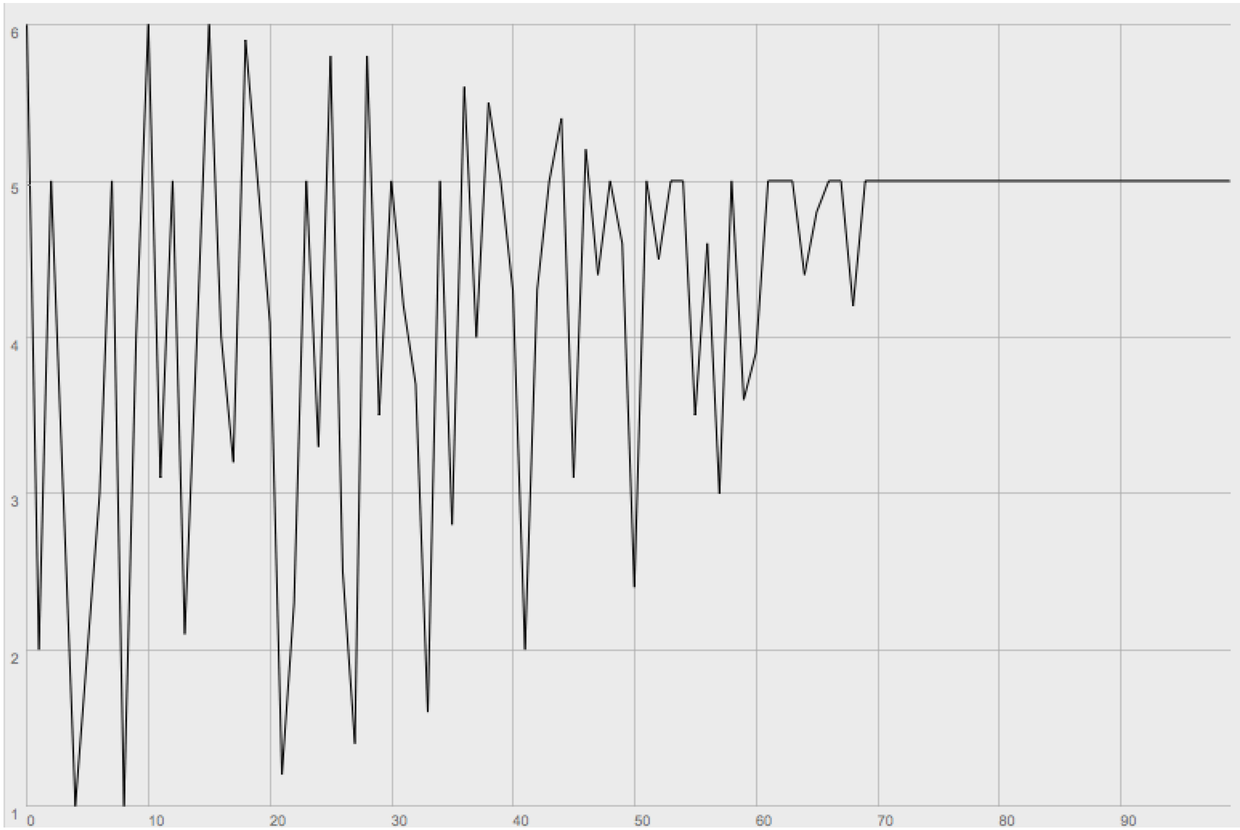

Figure 4. ConvergentArray: values [1, 2, 3, 4, 5, 6] converging across 100 iterations (N = 10, α = 2, quantization level: 0.1).

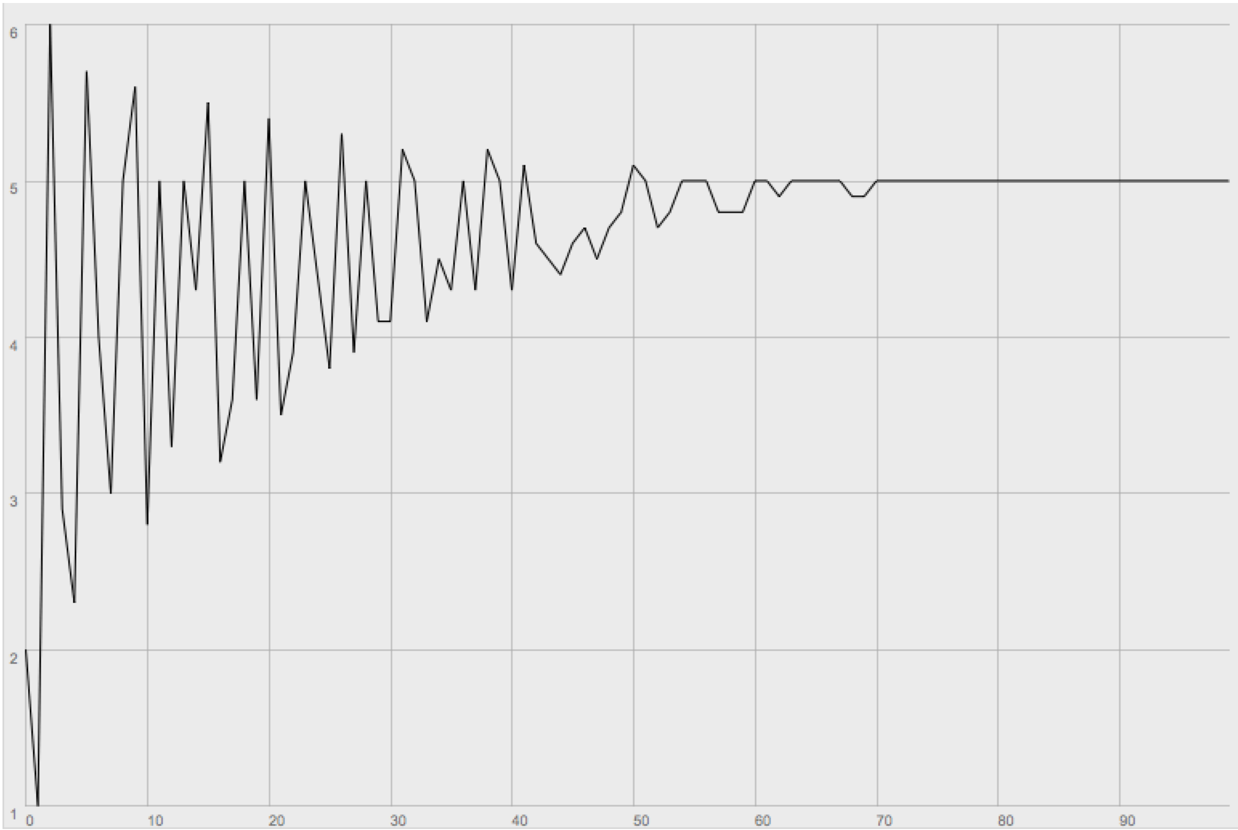

Figure 5. ConvergentArray: values [1, 2, 3, 4, 5, 6] converging across 100 iterations (N = 10, α = 0.5, quantization level: 0.1).

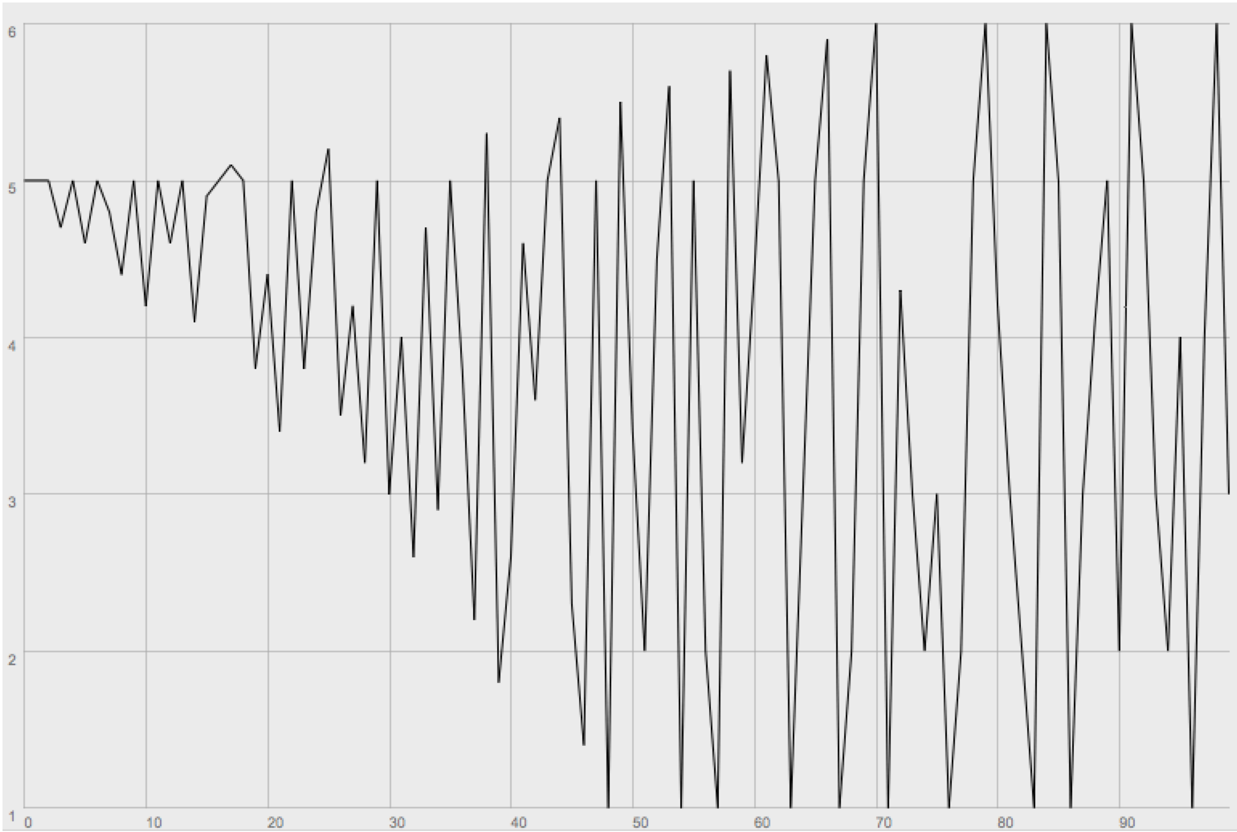

Figure 6. ConvergentArray: values [1, 2, 3, 4, 5, 6] diverging across 100 iterations (N = 10, α = 0.5, quantization level: 0.1).