



RRREaT-PT

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## **Research and Experiences across Time: Exploring Avenues**

The autumn month of September 2023 was exceptionally warm in the Netherlands with temperatures about 29° Celsius, where the average is about 18.5° Celsius (KNMI, 2023). More specifically, a temperature of 29° Celsius was never before experienced in September in the Netherlands counting from 1901. I do not want to discuss here whether or not this is due to climate changes because for me, the consequence of September 2023 being this exceptionally warm was that some apple and pear trees in my garden were blossoming. This gave the unusual scenery of some trees showing the autumn appropriate orange and red berries, while some fruit trees showed flowers. Also, some trees showed the red, yellow, and brown coloring of their leaves, and the falling down of leaves, whereas other bushes and plants were sprouting brightly new, green leaves. Although the spring-like scenery of some of the fruit trees, bushes, and plants were in the minority, there were several of them and it gave a strange contrast with the autumn-colored trees. It made me raise the following questions. First, might it be that the unusual spring-like behavior of some trees and plants is a reaction only to the warmer temperature? This is a quantitative question because it inquires about the influence of the height of the temperature. Second, might it be that only certain trees and plants reacted to the exceptional weather due to their development? Some of the trees and plants had developed insufficiently during the summer due to insect plagues (i.e., losing leaves and hardly having flowers) and a lack of rain. This is a categorical question that inquires about the influence of kinds of phenomena. Third, might it be more complex, in that the circumstances alter the cases in terms of providing for opportunities, in this case, that the blossoming of fruit trees and some plants only appear if a specific range of situational peculiarities is present? If so, can these situational peculiarities help to clarify *when and why* it only affects some trees and plants? Fourth, should the unusual spring-like behavior of some trees and plants merely be treated as outliers?

How can research account for events as they are happening in the actual world? Events are defined in this article in line with the Webster Dictionary as a noteworthy occurrence that happens in a segment of time, such as the arrival or the coming into being of blossoms on fruit trees, and a series of events can create a situation, such as the particular affair of having blossoms on fruit trees in the autumn (i.e., the way something is in relation to its surroundings, in this case, the autumn). It is expected that by including events and situations in research studies after some information has become available about a research subject, further clarifications regarding the research subject's nature or functioning in the actual world can be obtained in terms of finding conditional information (Van Velzen, 2023). That is, research has discovered facts that provide for actual-world descriptions, relationships, and predictable states that are accurate to a certain degree, but research outcomes of

actual world events also show variations and deviations and it is difficult to replicate results (see Cronbach, 1975; Lehrer, 2010, for overviews). Therefore, a further understanding about the reasons behind the already discovered, generalized, and detailed research results and findings is required.

Research that focuses on obtaining a deeper understanding of actual-world objects, phenomena, and processes has to deal with not only the amount of components and the interconnected relationships at certain points in the flow of time, but also the impact that present changes can have in directing future events. That is, research results and findings of actual-world objects, phenomena, and processes can provide for important global and detailed information, but these are nearly always approximations because the actual world is complex and its objects, phenomena, and processes can involve dynamical and different kinds of change patterns across time (e.g., Gundale & Kardol, 2020; Hobbs & Ong, 2023). This has raised critical questions in the research community about the appropriateness of the scientific method, for instance, regarding the so-called crisis in psychology that concerns issues about statistical significance and research replication (Ioannidis, 2012), and regarding the social sciences with respect to facets or the combining of multiple, different lines of inquiry (Mason, 2011). But also in physics, which has stood model for the scientific method in most research disciplines, there are unsolved problems (i.e., turbulence, particle detection and masses, gravity, antimatter, and time asymmetry: Carroll, 2016; Hansson, 2015; Strogatz, 2018) as a result of difficulties in setting up appropriate experiments and employing correct measurements and observations. Also, the existing theories contribute to the problems in terms of there being an incompatibility between Heisenberg's Quantum Theory and Einstein's General Relativity Theory, and Quantum Theory's measurement problem of collapsing states (see Example 1).

The characteristic features of events (and situations) and at the same time the characteristic difficulties with including events (and situations) in research studies is that they make up human experiences across time, are open to various interpretations up to a certain degree, and involve evolving change patterns due to the factor of time. Consequently, the study of events can provide for, on the one hand, possibly valuable sources of conditional information (i.e., that can contribute to the explanation of the function of the patterns of change across time and their typical consequences) and, on the other hand, methodological issues regarding the measurement of true properties, patterns of continuous, simultaneous, and interconnected change, and typical consequences. The aim of this article is to present three studies from different scientific domains that are exploring the issue of events as they are happening in the actual world in relation to obtaining verifiable evidence (i.e., prove it correct *and* disprove it: Sutherland, 2011, p. 99).

### **Example 1: Physics and the Nature of Events**

The first example requires a small introduction. The incompatibility between Quantum Theory and General Relativity Theory is an important issue because both theories are capable of describing events in the actual world. For example, Quantum Mechanics is applied to design electronic devices, such as lasers, solar cells, electron microscopes, and computer hardware. It also is expected that the to be designed quantum computer in the future will solve optimization problems more efficiently than the current computers do because it can find the best solution between countless possible solutions, that is, if researchers can reduce the breaking down of the qubits

(i.e., quantum bits or the basic units that encode information). The qubits' sensitivity to interferences from the outside environment of the computer (e.g., vibrations, radio waves, and temperature fluctuations) can result in the quick disappearance of quantum states or the qubits losing their quantum properties (i.e., decoherence). Next, General Relativity Theory can calculate accurately the precession of the perihelion of Mercury. That is, the advance of Mercury during its elliptical orbit around the Sun near its perihelion or the part of its elliptical orbit that is closest to the Sun, is a consequence of the Sun's gravity field that produces a "well" close to the Sun which causes an acceleration. General Relativity Theory also enables the Global Position System, a network of satellites that are circling the Earth to calculate your location on Earth with a precision of one meter.

The incompatibility between Quantum Theory and General Relativity Theory has compelled some researchers to explore the merits of both theories in comparison with and to each other (Macías & Camacho, 2008; Oppenheim, 2023). For example, Ormrod et al. (2023) explored the issue of whether an observed event in a research experiment can be absolute or relative. In Quantum Theory, the observed event in an experiment is considered to be absolute because it is the definite outcome or end result. That is, an event in the process of being can still have several possible states (e.g., being in the process of tossing a coin, it can come up heads and tails) until the end result is observed (i.e., it is either heads or tails). When the end result is observed, say, the coin comes up heads, then an absolute, definite state is obtained, however, practical reality (e.g., a replication experiment) can show that it could have been the alternative state of the coin coming up tails. In Quantum Theory this is called the measurement problem, in that during an experiment, multiple states are possible, but when the end result is obtained, then these possible states have randomly collapsed into one definite, absolute state. In their theoretical analysis, Ormrod et al. (2023) find that insisting on the absoluteness of events means that the physical principles of Bell nonlocality, preservation of information, and local dynamics all have a measurement problem. On the other hand, in General Relativity Theory, an observed event is not absolutely unique, but relative because it depends on some choice of reference, such as the experimental setup and who is observing what from which position in space. The problem with this latter theory is, as argued by Ormrod et al. (2023, p. 32): "But if the theory claims that all the subjective references are equally valid [because they depend on some choice of reference], it is not clear this [selection of a reference] can be done in a principled way . . . meaning that it can be hard to see how any set of experiences could confirm the theory." Hence, if observed events are relative, then it can easily lead to inconsistent results. Ormrod et al. (2023, p. 33) conclude as follows: ". . . the inconsistent perspectives might be allowed to peacefully coexist . . . to define an event not as a single classical variable taking a value, but as a whole collection of variables, corresponding to different possible perspectives . . . Then the challenge is to reign in the inconsistency to the extent that the theory makes clear and unambiguous predictions."

## **Example 2: Social Psychology and Explaining Events across Time**

If observed events can be relative, what then is the role of human interpretation of events? An analogy for human interpretation of events is different readers finding different parts of a text interesting similar to different people in an event focusing on different components of the event. Bruckmüller et al. (2017) have studied this issue of

the influence of human interpretation regarding observed events by reviewing the psychological and historical literature about people's perception of events in terms of which events do and do not require an explanation, which can also inform about how people construct event explanations. The behavior of explaining certain events involves (a) making sense of events via the taken-for-granted background components of the event, (b) explaining spontaneously those events that are unexpected, negative, and self-relevant, (c) making sense of and explaining the relation between events via its temporal order or which causes in the beginning of the event lead to certain effects, and (d) the embedded interpersonal relationships (i.e., including social action) can influence event explanation. That is to say, people's behavior of explaining events primarily consists of reacting to unexpected and self-relevant event-background information, but not as a pre-packaged behavior because the events are also actively constructed, in that the explanation of an event can give the event a reality that it did not possess previously. As such, event explanations can vary between contexts and over time, in that people also make sense of their past. For example, foundational assumptions that were at one time taken-for-granted as the background can become challenged (i.e., a memory that requires a reconstruction) at a later point in time. Therefore, Bruckmüller et al. (2017) concluded their review by stating that events and background expectations about the content (i.e., both perceived and actual) of explanations can be stable predictors of event explanation.

### **Example 3: Tourism and Experiencing Events**

If human active construction of the contexts of events plays a role in the observation of events, and these interpreted observations produce experiences, how then can researchers measure the value or meaning of event experiences? Biaett and Richards (2020) tackled this question by reviewing research on tourism and leisure that lies at the crossing of, on the one hand, the planning and managing process of delivering event experiences and, on the other hand, the experiencing of events by the visiting person, which refers to an intrinsic process. The converging of designing events and visitors' experiences not only show the variety in perspectives that researchers have to deal with when they want to measure the meaning of events as experiences across time, but also the variability of its impact (see Table 1).

Table 1

*Summary of the Main Components of Tourism Research on Events.*

Category	Main components
Designing events	Traditional; innovative; confrontational. Entertaining; social interaction; quality of life. Physical; creative; sensual-affective; challenging-dangerous.
Experiencing events	Behavioral intentions. Identity; culture; emotion. Personal characteristics; needs; contextual elements.
Measuring meaning	Immediate impact. Long-term effect. Thinking and feeling.

Table 1 shows the major results for the contextualizing of the meaning of events as found by Biaett and Richards (2020). Designing events is mainly about the delivery of an experience and, in broad outlines, there are three kinds of designing events: organizational based, mental-cognitive based, and performance based. Experiencing events depends on, in broad outlines, the visitor's behavioral intentions, personal belonging, and person-situational factors. The meaning of designing and experiencing events is measured via the immediate impact, long-term effects, and thinking and feeling. Overall, research on event experiences has to deal with the limitations of collecting data about the contextual and personal richness in event experiencing, in that "experiential values are very complex, delicately balanced, readily disturbed, and not easily duplicated from event to event" (Rust, 2020, in Biaett & Richards, 2020, p. 284). Therefore, Biaett and Richards conclude their review by emphasizing that research on event experiences is not just about selecting quantitative, qualitative, and mixed methods research, but rather about questioning how to measure the deepening aims of event research.

## Questions and Possibilities

Although the three example articles presented in this article were described rather truncated, they were selected because they present a range in reasoning that goes from abstract theoretical to empirical methodological considerations and from mathematical logics to individual thoughts and feelings regarding the observing and experiencing of events. Specifically, the reasoning in the presented example articles can show the serious attempts that are made currently by some researchers regarding the advancing of the scientific method for the study of the existence and nature of events in the actual world. The three example articles all emphasize the importance of advancing the current scientific method in terms of searching for ways to bring together the too strict and overly generalized as well as the too detailed research results and findings towards a more comprehensive understanding of *when and why* things are what they are in the actual world, but also by *not* abandoning appropriate research methodology. In this respect, the three example articles raise the same methodological issues that I have raised elsewhere (Van Velzen, 2020; 2023).

For Ormrod et al. (2023) the issue of the objectivity versus subjectivity of events and the related measurement problem concerns the mere state of affairs at a certain moment in time. Regarding their proposal that inconsistent perspectives might be allowed to peacefully coexist, it emphasizes the importance of reckoning with conditional information. Another way of looking at this is that making a distinction between absolute and relative observed events is a too narrow representation of the actual world, in that some events at a certain point in time can appear to be more absolute at one point and others more relative at another point in time, not per se in completely random and unpredictable ways, but as a consequence of certain factors (i.e., including observers) being present (or not) at a certain point in (or period of) time and with a certain impact regarding the producing of a certain outcome. Therefore, the study of Ormrod et al. (2023) can be understood as drawing attention to the position of there being true changes across time in the actual world in terms of a measurement moment always being a particular snapshot from a continuously evolving world via the elapsing of time. Consequently, such snapshots can only become understood when there is sufficient *conditional* information.

For Bruckmüller et al. (2017), the issue of interpreting events by attaching

explanations to it primarily relies on the importance of the relativity of place and space as it is experienced in relation to oneself. That is, event interpretation is based on someone's spatial position, expectations, and self-relevance in relation to actual contextual changes across time. Stated differently, the relationship between the context of an event, defined as that which is happening based on background expectations via cultural-historic norms in relation to someone's present spatial position and self-relevance (e.g., personal and situational circumstances), and the changes that occur within this context across time, will lead to the construction of experiences that may or may not require a reconstruction of memories at a later point in time (e.g., Harris et al., 2016). Regarding research measurements, this definition of event interpretation requires the data collection of contextual information because this information can connect the initially present conditions of a context to the when and why of the occurrence of certain patterns across time. Consequently, the necessary conditional information can be found in the *near-present time of the context*.

The main components of the review by Biaett and Richards (2020) showed that we can analyze or describe what is involved in observing events (i.e., from the designer, visitor, and researcher's perspective), we can also evaluate overall and detailed components, but we cannot yet synthesize how the surroundings and the unattended, but nevertheless present objects, phenomena, and processes in the event can contribute to meaningful or functional patterns. I think, it raises some important questions. Might it be that the surrounding and unattended givens that are often excluded from data analysis (e.g., emerging variables and outliers) are in reality necessary for the actual world to evolve as it does? Might it be that the actual world needs "noise" (Prigogine, 1984) to enable innovative change when the "usual" way of functioning in the actual world becomes insufficient as a consequence of the elapsing of time? Might it be that because of the elapsing of time, new kinds of innovative adaptations might one day be required to continue the *functioning* of the actual world? Biaett and Richards (2020) themselves make a plea for establishing a more balancing scientific method that can produce a more insightful picture of event experiencing.

Together the three example articles illustrate the richness of information in the actual world and the interconnected changes across time, the relativity of human interpretation, and the seemingly impossibility of capturing everything that takes place in the actual world in data analysis. The variety in the richness of information from the actual world when human interpretive construction of events can be found to reside mostly within certain functional patterns, requires a scientific method that goes beyond the simple selecting between quantitative, qualitative, and mixed methods data collection and analysis because actual-world functioning can involve innovative adaptations to sustain stability in a certain period of time. Therefore, on the one hand, there is the issue of human constructed interpretation of events and, on the other hand, there is the issue of a functioning actual world via stable patterns and "noise" that someday may become functional for adaptation. Although this is still a very abstract summary of what is happening in the actual world, it is the new challenge for establishing a future research methodology that can connect overgeneralized and detailed research results and findings in a scientifically appropriate way.

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