

# Drawing and Measure for Building Cosmic Harmony

Roberto de Rubertis

Drawing and measure are two fundamental words for the field of representation. Both can have two different meanings: one concerning their instrumental use, the other referring to their finalizations. As to the cosmic harmony called into question by this topic, I would like to say that it is an objective of great importance and extent, but also very generic and difficult to define. I will, therefore, start from definitions that permit me to specify the scope of application of the terms I will be using. Further on I will be more explicit.

In its most obvious and commonly understood definition, drawing is the representation of everything that can be depicted, with suitable graphic procedures, in a way that corresponds to how it appears or how it is thought of by an observer; that is, in the projective modalities with which it presents itself to his gaze, or with which it is im-

aged, remembered or even appropriately schematized. Measure is, instead, the value that is attributed to the dimensional (quantitative) characteristics of objects, substances or actions, whether concrete or even abstract, or referred only to the representation, that is to say, whether they exist in reality, or to which one can only make mental reference, by comparison with other objects, substances or actions taken as a unit.

Both terms defined above are subject to certain limitations.

Not everything that can be represented with drawings or other types of images can be measurable; for example, attributions of value regarding quality are not measurable, or are so, but only in a very subjective way.

Likewise, not everything that is measurable can be represented with drawings or images, if not through symbol-

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isms or allegories. In fact, it makes no sense to represent time, nor even space itself, which are still knowable and quantifiable entities, but devoid of material substance.

The digital tools and techniques used to represent and measure have today extended the fields of application of both drawing as well as measure, as described above, even to virtual figurative simulacra of everything that can appear; that is, everything of which it is possible to build, with the appropriate optical instrumentation, even the only visible (or perhaps only thinkable) image on which to intervene, as though it were real.

This extension of representability also to what is endowed only with an image allows visual accessibility to the world of virtual appearances that are neither tangible nor differently accomplishable. With various technologies, it is possible to simulate their coexistence with the concrete physical reality, offering, in this sense, variously applicable examples.

In fact, also giving rise to measurable representations are all of the experiments carried out in building or detecting the virtual (computer) simulacra of appearances on which it is then possible to intervene "as if" one were intervening on reality. In the same way, graphic descriptions of events can be constructed that are useful for experimenting operations (a classic example, Galileo's "mental experiments") whose representation can be drawn even before verifying their realization.

Most of the graphic operations that make use of the representation of traces and of the observations connected to them, that is, a large part of Descriptive Geometry, falls within this field of "measurable drawings": that is, those that go in search of that "universal" order of which we always feel the presence, underlying everything we succeed in understanding of the world we live in. Perhaps anticipatory of "cosmic harmony."

Kinematics (the science of movement) is the science that studies and measures the movement of bodies and that, therefore, makes use of the "drawings" that represent them and the "measure" that evaluates them. It is, therefore, the science that explores drawing in its figurative changes and measures the metric results. But these are results that only apparently confirm the existence of the harmony that, in other ways, we seek everywhere, when in our mind we explore the features of the world in search of the common laws connecting them. I therefore consider it inappropriate to call drawing and measure into question to confirm that the logical symmetries

that unite them are part of the marvelous play of that general order that in ancient thought seemed to regulate the laws of the universe and that even today still attracts us so strongly. It would reveal itself to be a counter-current reference to what now proves to be a progressive growing complexification of the nature of the world, even in the infinitely small, and, in any case, at every scale and in every sphere of the scientific investigations underway.

The universe, in fact, reveals itself to be increasingly unknown and far from those simplifications that until the last century had deceived even the most aggressive science and philosophy, suspicious of any easy, illusory logical symmetry. The most updated studies today confirm that the matter and the energy of which the universe is composed become progressively less comprehensible in their profoundest essence, where, moreover, kinematics and, substantially, even geometry are of little help.

In particular, it would be an error to believe that drawing and measure are two symmetrical aspects of reality, easily accessible through knowledge and easy to investigate, for listening to the marvelous harmony of the cosmos, and perhaps even for indicating appropriate strategies of its in-depth study.

On the contrary, the image of the world that today the most advanced science presents to us is very different and more complex than one might have expected.

Therefore, it is not through a simple juxtaposition of the two words "drawing" and "measure," with the meanings previously defined, that we can refer today to a cosmic harmony; however, the reference can be supported by attributing other meanings to them, these also being of wide and frequent use. By "design" [1] we also mean "intention" (plan, objective) and by "measure," we also mean "equilibrium" (moderation, control, canon, limit); meanings that attribute to both terms the objective of operating with wisdom and foresight in any intervention which should be planned for the health of the world.

The question to which the present reflection strives to give an answer, however, does not change. Drawing and measure are basically the same two ancient words and their alternative meanings, for the purposes of this forum, without detracting anything from their other meanings, of more ordinary use within the context of representation, now aim to address more directly the desired results, which are synthesized with the happy formula "cosmic harmony." Therefore, the essential references to these two words remain valid for the correct participation of

mankind in global destinies, but in the context of a new and more concrete presence of man in evaluating, deciding and, if necessary, changing the trend. It will no longer be just a matter of knowing how to observe and evaluate the evolution of things, but of knowing and being able to influence them by understanding their nature and being able to anticipate their mutations. Precisely those mutations that today concern the dramatic questions of human survival on the planet; those that man has neglected for much too long, operating recklessly and producing, with his intervention, more damage than improvement. In the innovative exploration that the two new meanings suggest, however, kinematics and metrics are no longer helpful.

On the contrary, the image of the world that today's most advanced science presents to us is very different and more complex than one might have expected. This is testified in particular by Erwin Schrödinger, whose studies, on several occasions, show how strongly scientific knowledge of the world differs from those simplifications that until the last century had deceived even the most aggressive science and philosophy, suspicious of any easy and illusory logical symmetry. Schrödinger, in fact, reminds us how important it is, even in the pursuit of a lucid self-awareness, for man to possess a clear and true "image of the world" in which he lives.

Thus one must believe in the new morality that results, also to guide the quest to achieve the desired (cosmic) harmony.

The attitude that must instead distinguish those who today work moved with these intentions must be very different: it must aim to remedy the well-known errors that the civilization of consumption has produced in the last century, and especially in recent decades, leading the planet to the brink of ecological disaster. This is the only true objective that can deserve the definition of "cosmic harmony" and towards which the productive convergence of drawing and measure would be opportune; precisely with their meanings of design and equilibrium, in acting, evaluating and providing appropriately.

## Epilogue

This will only be possible when skillful draftsmen and measurers will be able to address, using the tools of representation, that is, the "design" to save the world, with



Fig. 1. Carlo Enrico Bernardelli, *Rhythms of matter in formation*.

the “measure-equilibrium” necessary and appropriate for ensuring its future.

Rarely do the divulgative publications that deal with these themes, of extreme vastness and, above all, of difficult illustration, dwell in offering readers an adequate apparatus of charts, schemes, diagrams, in any case, of images, able to transfer to the figurative plane that which is presented verbally or analytically. Whoever knows how to do this, and thinks he can contribute to fill this gap, should do so.

This is because, especially in the field of scientific divulgation, there is a lack of tools to properly illustrate in which dimensional and figurative field, that is, at what scale and in what way, the phenomena described by science only on the basis of theoretical statements occur. On the other hand, it cannot be excluded that in the graphic representation of complex phenomena, even problems that seem obscure by analytical means can be solved.

#### Notes

[1] Translator's note: in this case, the appropriate translation of the Italian term “*disegno*” is “design,” rather than “drawing.”

Classic, in this regard, is the resolutive idea proposed by Friedrich August Kekulé in 1825 for the structure of the benzene molecule: he suggested a hexagonal configuration of carbon and hydrogen atoms, thus succeeding in understanding the true shape of an atomic structure that with a linear arrangement could not be found.

Therefore, it is not enough to call drawings and measures into question, as requested in this call, but it would be a fine adventure of thought, and above all an effective result of dissemination, to inform the reader, also through “designs,” [2] intended precisely as “operational programs” and through measures, intended precisely as “control instruments,” of how serious the environmental situation is towards which, unfortunately, with nonchalant unawareness, humanity is heading. And, therefore, what a splendid “cosmic harmony” we risk losing forever.

[2] See note 1.

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